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Connersville

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Connersville, Ind.

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Chicago

114 Liberty St.
New York

Motor Driven Rotary Pump with discharge air chamber.

Vol. LXVIII THE IRON TRADE REVIEW No. 9
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Prices Fail To Attract Buyers

Expectation That Steel Corporation May Reduce Schedules Soon Contributes to Holding Up of Orders—Operations of Leading Producer Continue To Fall—Some Independents Gain—February Pig Iron Output Drops Sharply

DESPITE price concessions of increasing attractiveness, buyers of iron and steel are maintaining an attitude of general indifference. How far this hesitation is attributable to a firm belief that the Steel corporation soon will be forced to drop its quotations to a competitive basis, cannot be stated positively. Nevertheless it has become more apparent that the passive position of the leading producer at this time is an important factor contributing to the prevailing uncertainty and speculation over the future course of the market. As a whole, conditions are weaker than at any time in recent weeks, in that virtually all the more important independent mills now have adopted the policy of meeting whatever concessions are necessary to hold their own trade.

Such changes in operating conditions as are taking place are in favor of the independent producers as against the Steel corporation plants. Production all around, however, is lower if anything, owing to the restricted volume of new business. Within the past 30 days, 17 Steel corporation blast furnaces have been put out, and steel works production has been reduced to around 65 per cent and mill activities to an even lower basis. The H. C. Frick Coke Co. put out 1841 additional ovens in the week.

Independent works have made gains in the Mahoning valley where 35 sheet mills were started this week raising production to 38 from 5 per cent last week and several open hearths were put on. Eastern plate mills are running better.

Iron Output Falls Low

Merchant pig iron production has continued to run off faster than the output of the steelworks blast furnaces. The former output was approximately 30 per cent and the latter 17 per cent less in the 28-day operations in February, compared with the 31 days in January. The total of iron produced in February was 1,927,088 tons and daily average, 68,824 tons. In January it was 2,414,753 and 77,895 tons respectively. This is the lowest monthly output since February, 1915, excepting October, 1919, when many furnaces were banked because of the steel strike. Furnaces in blast on the last day of February were 153 against 184 on the corresponding date the previous month. In the past five months, 164 furnaces have dropped out of production.

Foundry Melt Far Down

Foundry operations are on an average basis of 23 per cent of capacity in the dense industrial district embraced by the states of Ohio, Michigan, Indiana, northwestern Pennsylvania and western New York. This condition has been disclosed by a very comprehensive survey just completed by important pig iron interests and covering over 100 plants. It is significant in view of the reports of returning activity to the automotive industry that Michigan makes the poorest showing of any territory and is 7 to 8 per cent below the average. In view of this general situation, the outlook for better pig iron buying in the near future is not promising. Everywhere new sales are on a small scale. The market remains soft, with $26 base appearing at Chicago, in the valleys and in the East. A 9000-ton sale of low phosphorus was closed.

THE IRON TRADE REVIEW's composite market average for February was $48.81 as against $51.73 in January and $65.63 in February, 1919. This week's composite is $46.65. In March 1914 it was $23.60.

Mill prices are yet to be stabilized. Wrought iron pipe makers have put out new discounts carrying reductions around $10 per ton. Buyers are reporting a willingness of some mills to quote plates, shapes and steel bars down to 1.90c Pittsburgh. Sheet bars have been sold under the equivalent of $40 Pittsburgh. In a 2000-ton transaction, it is reported a distant mill was netted only $35.

German Loss Is Shown

First figures of Germany's export trade in iron and steel issued since the war, put her outside shipments during the first six months of 1920 at 735,000 tons. In the same period in 1913, they were 3,352,000 tons. Belgian competition continues to put British makers on the defensive. Belgian steel bars have been offered at 2.15c New York, duty paid, or about 1.80c Pittsburgh, and plates at 3.00c New York or about 2.65c Pittsburgh.

THE IRON TRADE REVIEW

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Price Policies Show Trend

NOT in several years has there been so much general discussion both within and without the iron and steel industry of the apparently divergent policies as to wages and prices now being pursued by the United States Steel Corp. and the independent producers. The difference however, on closer analysis seems to be one of time rather than of confirmed position. The independent producers made their cuts in both prices and wages when they felt the strong necessity of doing so. The Steel corporation because of its superior operating position and larger order book manifestly has not yet been called upon to meet such a situation as that faced by the independent mills. Price reductions always have had only one object, namely to increase the amount of tonnage that may be put on the mills. For the Steel corporation to reduce prices before it actually needs the business is more than any business man would expect. In this connection it is pertinent to refer to Judge Gary's recent statements on the position of the Steel corporation. In plain English these have not committed that producer to a fixed decision against reductions. What Judge Gary did say was that there was no present intention to cut either prices or wages. Manifestly future action was left to be dictated by conditions that might then prevail. This point needs to be emphasized in view of some of the confused versions of the Steel corporation policy that seem to be prevalent.

How the independent producers regard the present situation is set forth in a representative way in an interview by Chairman John A. Topping of the Republic Iron & Steel Co. published in this issue. Mr. Topping puts reductions of both prices and wages on economic grounds. If lower prices of iron and steel are necessary to bring about trade recovery and to conform with a falling scale of values in other commodities, lower costs of production are essential. Wages accordingly must contribute their just share to this readjustment. This position of the independent producers as thus expressed, is based upon the conclusion that through lower prices only can stabilization finally be effected and business activity be restored.

Labor having been reduced, Mr. Topping points out another fundamental factor affecting iron and steel costs which calls for readjustment is freight rates. As he puts it, present transportation charges are on a war basis and cannot be maintained. To those who have carefully examined the situation the matter of freight represents the greatest obstacle of all to a complete realignment of iron and steel costs and prices. Growing pressure for such a readjustment is inevitable.

What is being witnessed in iron and steel today is nothing more than is going on in every branch of business. An economic situation which has been badly out of joint with the best interests of the average individual, collectively considered, is in process of repair. That it will continue until a state of complete equilibrium of values has been reestablished is indicated by every test of commercial history.

Foreign Trade Without Formula

ITALY dropped from the front rank of buyers of American steel products in 1919, and last year it was France which gave way in its leading position to other foreign consumers. Both Italy and France during the war enjoyed a prominence in taking exceptionally important tonnages of the output of American mills. It was to be expected they would, in time, revert to their former positions. That time, apparently, has come, hastened, no doubt, by the respective domestic problems of each nation. These changes in the ranks of steel buyers, together with some others pertaining to lesser tonnages and fewer products, are part of the international readjustments growing out of the war.

Much has been said concerning the opportunity the war gave the United States to establish itself in

markets formerly monopolized by other manufacturing countries. This especially is true as to South American, Asiatic, African and Australian markets. Time is yet too short, however, to measure the full effect of present buying and that of the past year or two, as to a permanent addition to the pre-war trade. In this period of international business readjustment changes are occurring and they likely will occur despite anything the American manufacturer may do to thwart them or encourage them. In these days of international and national ills the factors are too many to admit of regulation or control. The best efforts can only be directed to carry on the present business and meet the problems as they arise with the hope that in the final clarification process, fixed trade advantages to this country will have accrued. The situation is without an immediate formula.

No Import Menace Seen Yet

ADMITTEDLY one of the most important tasks awaiting the new national administration is the shaping of a constructive and modern tariff policy. In some quarters it is contended that a protective tariff wall is a requisite for American trade revival. Recent records of export and imports, however, do not bear out this conclusion. In the last few months imports have been dwindling while exports have been maintained on a high level. It is extremely difficult to become alarmed over a dumping menace when viewing the January excess of exports of $446,000,000, the third largest on record.

Imports during the first month of the new year were $208,000,000 a decrease of $265,000,000 or 55 per cent from January, 1920. These imports were the smallest in value of any month back to February, 1918. In December, 1920 imports were $266,000,000. It is significant that imports of merchandise into the United States during the seven months of the fiscal year ended with January totaled $2,543,000,000 against $2,768,000,000 in the corresponding period of 1920. January exports were valued at $655,000,000 against $721,000,000 in December and $722,000,000 in January of 1920. The seven months exports show a gain over the previous year. The total is $4,638,000,000 against $4,585,000,000.

These figures with all of the complicated ramifications of international trade, foreign exchanges, foreign production costs, etc., emphasize the difficulties of framing a suitable tariff. Some of the country's foremost economists point to the large present total of exports and to our expanded productive capacity and assert that the real task is to maintain the hold recently secured by us on foreign markets.

In addition the nation's creditor position cannot be blinked at in working out the tariff. Before the war we owed abroad $5,000,000,000. Now the rest of the world owes us nearly $14,000,000,000. Whether we will or not, many weighty authorities say, inevitably we shall tend toward freer trade, because to continue to sell we must buy. Manifestly the country cannot continue to pile up indefinitely the vast export credits without disarranging our own and the world's markets and keeping exchanges upset. Viewed from any angle the tariff doubtless will prove one of the hardest problems that the Harding administration will have to solve.

Standard Costs for Tool Builders

A MEETING of unusual significance to the machine tool industry was held in Cleveland last week when the members of the National Machine Tool Builders' association adopted a series of suggestions regarding cost accounting. The seven hundred toolmakers who attended the meeting not only showed their approval of the principle of uniform costs but also displayed an unusual amount of enthusiasm indicating that the decision made at the meeting will crystalize into definite action.

Only a few years ago there were almost as many methods of cost accounting as there were manufacturing plants. This condition applied not only to the machine tool industry but to practically every industrial establishment. In many cases the builders of costly tools and machinery estimated their selling prices on cost data which were scarcely more reliable than guesses. Moreover, even the manufacturers who made some pretense of following a definite method of arriving at costs totally ignored important factors which should have been considered in determining the selling prices.

At the present time, although more thought is being given to costs than ever before, the problem of fair competition is complicated by the fact that various firms operate on a partially or totally different basis. The machine tool builder in a rented plant has a somewhat different accounting problem than the firm doing business in a complete shop owned and paid for by the company. Moreover, in many instances the main plant is simply a machine shop where the castings, forgings and other parts purchased from outside companies are finished and assembled. The problem in plants of this kind is totally different from that confronting manufacturers who operate their own factories, forge shops and pattern works.

The report adopted by the tool builders covers all of the important details of cost accounting and if the recommendations are followed with anything like a uniform spirit of co-operation by the various members of the machine tool industry, the time will soon come when tools will be sold for what they are worth. Until all producers in a competitive market enter upon a practical system of uniform accounting, the consumers will continue to suffer because of the disturbing effect of prices based upon guesswork.

Iron and Steel Prices

CORRECTED TO WEDNESDAY NOON—SCRAP, WAREHOUSE, ORE AND OTHER PRICES ON PAGES 660 AND 664

Pig Iron

Bessemer, valley	$27.00
Bessemer, Pittsburgh	28.96
Basic valley	25.00
Basic, Pittsburgh	26.96
Basic, Buffalo	30.00
Basic, delivered, eastern Pa.	26.50 to 28.50
Malleable, valley	27.00 to 27.50
Malleable, Pittsburgh	28.96 to 29.46
Malleable, Chicago	29.00 to 30.50
Malleable, Buffalo furnace	30.00
Malleable, del., eastern Pa.	29.90 to 31.24

FOUNDRY IRON SILICONS

No. 2 Northern	1.75 to 2.25
No. 2 Southern foundry	1.75 to 2.25
No. 2X Eastern and Virginia	2.25 to 2.75
No. 1X Eastern	2.75 and up
No. 1 Chicago	2.25 to 2.75
No. 2 foundry Eastern	1.75 to 2.25

No. 1X, eastern del. Phila.	$29.76 to 32.02
No. 1X, Buffalo	33.00
No. 2 foundry, valley	26.00 to 28.00
No. 2 foundry, Pittsburgh	27.96 to 29.96
No. 2 foundry, Buffalo	30.00
No. 2 foundry, Chicago	28.50 to 30.00
No. 2 foundry, Ironton furnace	28.00 to 29.00
No. 2 foundry, Cleveland	27.00 to 28.00
No. 2X, eastern del. Phila.	28.34 to 30.54
No. 2X, eastern N. J., tidewater	28.82 to 30.54
No. 2X, eastern del. Boston	31.06 to 34.06
No. 2X foundry, Buffalo fur.	31.25
No. 2X, Buffalo del. Boston	33.71 to 34.71
No. 2 foundry del. Phila.	27.26 to 29.54
No. 2 foundry, N. J., tidewater	27.82 to 29.54
No. 2 southern, Birmingham	26.50 to 27.50
No. 2 southern, Cincinnati	31.00 to 32.00
No. 2 southern, Chicago	33.16 to 34.16
No. 2 southern, Philadelphia	35.16 to 36.16
No. 2 southern, Cleveland	33.16 to 34.16
No. 2 southern, Boston	33.65 to 35.65
No. 2 southern, St. Louis	32.22 to 33.22
No. 2X, Virginia furnace	29.25 to 30.25
No. 2X, Virginia Philadelphia	34.99 to 35.99
No. 2X, Virginia, Jersey City	35.41 to 36.41
No 2X, Virginia, Boston	35.83 to 37.83
Gray forge, eastern Pa.	29.75
Gray forge, valley, Pitts.	26.96 to 27.96
Low phos., standard, valley	43.00 to 44.00
Low phos., standard, Phila.	46.32 to 46.82
Low phos., Lebanon furnace	40.00
Charcoal, Superior, base, Chi.	38.50

Silvery Iron

8 per cent base at furnace

Jackson County, Ohio	$43.50
Tennessee, Chicago delivery	43.03
Ohio brands, Chicago	48.82

Bessemer Ferrosilicon

Jackson County, Ohio, furnace

10 per cent	$53.00
11 per cent	56.30
12 per cent	59.60

Coke

Connellsville furnace	$4.50 to 5.00
Connellsville foundry	6.00 to 6.50
Pocahontas furnace	8.50
Pocahontas foundry	9.00 to 10.00
New River furnace	7.00 to 8.00
New River foundry	9.00 to 11.00
Wise county furnace	6.50 to 8.00
Wise county foundry	7.50 to 8.50

Ferroalloys

Ferromanganese, 80 per cent, delivered, domestic metal	$90.00 to 95.00
Ferromanganese, 80 per cent, English, c.i.f. Atlantic port	nominal
Spiegel, 18 to 22 per cent furnace spot	34.00 to 37.00
Ferrosilicon, 50 per cent, contract delivered	92.00 to 95.00
Ferrosilicon, 50 per cent, spot delivered	76.00 to 90.00
Ferrotungsten, standard, per pound contained	55.00c to 60.00c
Ferrochrome, 60 to 70 chromium, 6 to 8 carbon, per pound contained, maker's plant	16.00c to 16.50c
Imported ferrochrome, 6 to 8 per cent carbon	nominal
Ferrovanadium, 30 to 40 per cent per pound estimated, according to analysis	5.00 to 6.75
Ferro carbon-titanium, carloads, producers plant, per net ton	$200.00

Semifinished Material

BILLETS AND BLOOMS

(4 x 4-inch)

Open-hearth, Pittsburgh	$38.50 to 42.00
Open-hearth, Youngstown	38.50 to 42.00
Open-hearth, Philadelphia	43.74 to 49.24
Bessemer, Pittsburgh	38.50 to 42.00
Bessemer, Youngstown	38.50 to 42.00
Forging, Pittsburgh	45.00 to 51.00
Forging, Philadelphia	53.74 to 54.24

SHEET BARS

Open-hearth, Pittsburgh	$42.00
Open-hearth, Youngstown	42.00
Bessemer, Pittsburgh	42.00
Bessemer, Youngstown	42.00

SLABS

Pittsburgh and Youngstown	$38.50 to 42.00

WIRE RODS AND SKELP

Wire rods, Pittsburgh	$52.00 to 57.00
Grooved skelp, Pittsburgh	2.35c to 2.45c
Universal skelp, Pittsburgh	2.45c to 2.50c
Sheared skelp, Pittsburgh	2.55c to 2.65c

Shapes, Plates and Bars

Structural shapes, Pittsburgh	2.10c to 2.45c
Structural shapes, Phila.	2.45c to 2.80c
Structural shapes, New York	2.48c to 2.83c
Structural shapes, Chicago	2.53c to 2.83c
Tank plates, Pittsburgh	2.10c to 2.65c
Tank plates, Chicago	2.53c to 3.03c
Tank plates, Philadelphia	2.45c to 3.00c
Tank plates, New York	2.48c to 3.03c
Bars, soft steel, Pittsburgh	2.10c to 2.35c
Bars, soft steel, Chicago	2.48c to 2.73c
Bars, soft steel, New York	2.38c to 2.73c
Bars, soft steel, Philadelphia	2.35c to 2.70c
Bar iron, common, Phila.	2.70c
Bar iron, common, Chicago	2.68c
Bar iron, common, Cleveland	3.75c to 4.00c
Bar iron, common, New York	2.73c
Bar iron, common, Pittsburgh	2.70c to 3.06c
Hard steel bars, Chicago	2.50c to 2.65c

Rails, Track Material

Standard bessemer rails, mill	$45.00
Standard open-hearth rails, mill	47.00
Relaying rails, light, St. Louis	35.00 to 40.00
Relaying rails, Pittsburgh	43.00 to 46.00
Angle bars, Pittsburgh base	2.45c
Angle bars, Chicago base	2.75c
Light rails, 25 to 45, mills	2.25c to 2.50c
Spikes, railroad, Pittsburgh	3.65c
Spikes, railroad, Chicago	4.03c
Track bolts, Pittsburgh	4.60c to 5.50c
Track bolts, Chicago	4.98c to 6.38c
Tie plates, Chicago	3.00c to 3.50c

Wire Products

(100 lbs. to jobbers, carloads; retailers, 10c more)

Wire nails, Pittsburgh	$3.10 to 3.25
Plain wire, Pittsburgh	3.00 to 3.25
Galvanized wire, Pittsburgh	3.70 to 3.95
Barbed wire, painted, Pitts.	3.15 to 3.40
Barbed wire, galv., Pitts.	3.85 to 4.10
Polished staples, Pittsburgh	3.15 to 3.40
Galvanized staples, Pitts.	3.85 to 4.10
Coated nails per count keg, Pitts.	2.85 to 3.35

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Chain, Piling, Strip Steel

Chain, 1 in. proof coil, Pitts.	6.75c
Sheet piling base, Pitts.	2.00c to 2.55c

Cold rolled strip steel, hard coils, 1½ inches and wider by 0.100-inch and heavier, base per 100 pounds 6.00c to 6.25c

Sheets

SHEET MILL BLACK

No. 28, open-hearth, Pitts.	4.00c to 4.35c
No. 28, bessemer, Pittsburgh	4.00c to 4.35c
No. 28, open-hearth, Chicago	4.38c to 4.73c
No. 28, open-hearth, Phila.	4.35c to 4.70c

TIN MILL BLACK

No. 28, open-hearth, Pitts.	4.00c to 4.35c
No. 28, bessemer, Pittsburgh	4.00c to 4.35c

GALVANIZED

No. 28, open-hearth, Pitts.	5.25c to 5.70c
No. 28, bessemer, Pittsburgh	5.25c to 5.70c
No. 28, open-hearth, Chicago	5.63c to 6.08c
No. 28, open-hearth, Phila.	5.60c to 6.05c

BLUE ANNEALED

No. 10, open-hearth, Pitts.	3.20c to 3.55c
No. 10, bessemer, Pittsburgh	3.20c to 3.55c
No. 10, open-hearth, Chicago	3.58c to 3.93c
No. 10, open-hearth, Phila.	3.55c to 3.90c

Tin Plate

(Per 100 lb. box)

Tin plate, coke base, Pittsburgh	$7.00

Iron and Steel Pipe

Base Discounts Pittsburgh to Jobbers Carloads

	Black	Galv.
½ to 3 in., butt steel	57½	44
¼ to 1½ in., butt iron	29½	13½

Full pipe schedule page 664.

Boiler Tubes

Steel, 3½ to 4½ inches, c. l.	40½ off
Iron, 3½ to 4½ inches, c. l.	12 off

Full boiler tube schedule page 664.

Cast Iron Water Pipe

Without War Freight Tax

Class B Pipe

Four-inch, Chicago	69.10
Six-inch and over, Chicago	64.10
Four-inch, New York	73.30
Six-inch and over, New York	63.30
Four-inch, Birmingham	60.00
Six-inch and over, Birmingham	55.00
Three-inch, Birmingham	70.00

Class A pipe is $4 higher than Class B

Hoops, Bands, Shafting

Hoops, Pittsburgh	2.80c to 3.05c
Bands, Pittsburgh	2.80c to 3.05c
Hot rolled strip steel, Pittsburgh stamping quality	3.00c to 3.30c
Cold finished steel bars, Pittsburgh base	3.25c to 3.60c

Rivets

Structural rivets, Pittsburgh	3.80c to 3.90c
Boiler rivets, Pittsburgh	3.90c to 4.00c
Rivets, ⅞ in. and smaller, Pittsburgh	60 and 10 off

Nuts and Bolts

(Prices f.o.b. Pittsburgh)

CARRIAGE BOLTS

(⅜ x 6 inches, smaller and shorter)

Rolled thread	60 off
Cut thread	50-10 off
Larger and longer	50-10 off

MACHINE BOLTS

(⅜ x 4 inches, hot pressed nuts)

Rolled thread	60-10-10 off
Cut thread	60-10 off
Larger and longer	60 off
Plow bolts Nos. 1, 2 and 3 heads	50-10-5 off
Other style heads	50-10-5+20%
Stove bolts in packages	75-10-10 off
Stove bolts in bulk	75-10-10-2½ off
Cold pressed semifinished hexagon nuts ⅝ in. and larger	70-10 off
Cold pressed semifinished hexagon nuts ⅝ in. and smaller	80 off
Gimlet and cone point lag screws	65 off

NUTS

(Up to 1¼ and 1½ inches inclusive)

Hot pressed, square blank	$3.25 off
Hot pressed, square tapped	3.00 off
Hot pressed, hexagon blank	3.25 off
Hot pressed, hexagon tapped	3.00 off
Cold pressed, square tapped	2.85 off
Cold pressed, square blank	3.10 off
Cold pressed, hexagon tapped	2.85 off
Cold pressed, hexagon blank	3.10 off

Prices Present and Past

Representative market figures yesterday, one month ago, three months ago and one year ago

Prices given in this table are those ruling on the largest percentage of sales, at the dates named

	Prices Mar. 2, 1921	Average prices Feb., 1921	Dec., 1920	Mar., 1920
PIG IRON—				
Bessemer, valley, del., Pittsburgh	$28.96	$30.96	$36.96	$43.40
Basic, valley, del., Pittsburgh	26.96	28.71	34.96	44.40
*No. 2 Foundry, val. del. Pitts	28.96	29.96	37.56	43.40
*No. 2 Foundry, Chicago	28.00	28.65	37.00	43.00
Lake Superior charcoal, Chicago	38.50	38.50	51.50	57.50
Malleable, valley	27.00	28.75	36.00	43.75
Malleable, Chicago	28.50	29.15	37.50	43.50
*Southern, No. 2, Birmingham	27.00	27.90	38.00	40.00
*Southern Ohio, No. 2, Ironton	28.00	30.00	37.25	43.25
Basic eastern del. eastern Pa	27.50	29.95	35.60	43.00
**No. 2X, Virginia furnace	29.25	31.25	40.05	43.25
**No. 2 X, eastern del., Phila	29.00	31.05	38.75	45.68
Gray forge val., del. Pittsburgh	27.96	29.21	36.56	42.40
Ferromanganese, 80 per cent, del.	92.50	96.85	120.00	172.00
SEMIFINISHED MATERIAL—				
Sheet bars, bessemer, Pitts	42.00	43.00	47.60	70.00
Sheet bars, open-hearth, Pitts	42.00	43.00	47.60	72.50
Billets, bessemer, Pittsburgh	38.50	41.00	45.10	65.00
Billets, open-hearth, Pittsburgh	38.50	41.00	45.10	66.25
FINISHED MATERIAL—				
Steel bars, Pittsburgh	2.00c	2.15	2.35	3.85
Steel bars, Chicago	2.38c	2.52	2.73	3.03

	Prices Mar. 2, 1921	Average prices Feb., 1921	Dec., 1920	Mar., 1920
FINISHED MATERIAL—Continued				
Iron bars, Philadelphia	$2.70	2.70	4.05	4.20
Iron bars, Chicago mill	2.63	2.65	3.45	3.50
Beams, Pittsburgh	2.15	2.30	2.45	3.25
Beams, Philadelphia	2.50	2.65	2.80	4.00
Beams, Chicago	2.58	2.72	2.85	3.63
Tank plates, Pittsburgh	2.15	2.35	2.65	3.75
Tank plates, Chicago	2.53	2.76	3.03	3.38
Tank plates, Philadelphia	2.50	2.70	3.00	4.25
Sheets, blk., No. 28, Pittsburgh	4.00	4.20	4.45	6.00
Sheets, blue anl., No. 10, Pitts	3.20	3.35	3.65	5.50
Sheets, galv., No. 28, Pittsburgh	5.25	5.50	5.80	7.25
Wire nails, Pittsburgh	3.25	3.25	3.25	4.00
COKE—				
Connellsville furnace, ovens	4.75	4.85	6.20	6.00
Connellsville foundry, ovens	6.25	6.30	7.20	7.00
OLD MATERIAL—				
Heavy melting steel, Pittsburgh	15.00	15.00	17.20	28.00
Heavy melting steel, eastern Pa	14.50	14.50	16.70	25.55
Heavy melting steel, Chicago	14.25	15.25	16.30	24.19
No. 1 wrought, eastern Pa	20.50	20.50	20.90	36.50
No. 1 wrought, Chicago	15.00	15.90	16.60	30.00
Rerolling rails, Chicago	15.00	15.90	16.70	32.62

*1.75 to 2.25 silicon. **2.25 to 2.75 silicon.

Foundry Operations are Sluggish

23 Per Cent Average Melt Shown by Comprehensive Survey of Leading Industrial States—Automotive Centers Make Poorest Showing—Pig Iron Market Remains Dull—$26 Base Price Now Appearing

Philadelphia, March 1.—A price of $26, eastern Pennsylvania furnace, on No. 2 plain foundry iron (1.75 to 2.25 silicon) has appeared in this district in the past week, but only in connection with live inquiries of 500 tons or more. On large inquiries $27 and $27.50, furnace, have been quoted on No. 2X (2.25 to 2.75 silicon). These prices were quoted only in a few instances. On the usual run of business $27 and $28, base, is being done. One order for over 500 tons was placed at $28, base. Some sizable business was placed in the past week at $26.50, base. The demand is improving. A fair total was placed and pending inquiry includes 500 tons for South Philadelphia, 500 tons for Easton and 1000 tons for a Philadelphia consumer, and a number of smaller inquiries. Central Pennsylvania No. 2 plain can be had at $26, furnace. Virginia iron has been sold off stock pile at $28 and $29, furnace, for No. 2 plain. An eastern consumer is inquiring for basic but is unwilling to pay higher than $25, delivered, which is lower apparently than furnaces would do. The eastern basic market now is between $25 and $27, eastern Pennsylvania furnace. One eastern consumer placed 9000 tons of copper-free low phosphorus and another 200 tons. The market for this grade now is $41 to $41.50, eastern furnace. Several small inquiries for copper-bearing and copper-free are expected to be closed in the next few days. Copper-bearing iron continues to be held at $40, furnace.

The market for gray forge iron is devoid of developments. Malleable now can be had at $28.50 to $29, eastern Pennsylvania furnace, but no business has been placed.

Lower Levels at Chicago

Chicago, March 1.—That foundry pig iron has been sold to a consumer in Wisconsin at a price which would figure back to $24, Chicago furnace, for 1.75 to 2.25 silicon,. is apparent from a tonnage recently placed. This iron is for March delivery to a maker of sanitary goods and involves 2000 tons. It is understood this iron was sold at $26, delivered. Freight from Chicago is approximately $2. It is understood the iron will be shipped from a furnace in Wisconsin. This is the only tonnage of importance coming up in this market recently. A sale of 200 tons of malleable to a Milwaukee user was made at $27, Chicago. Some inquiry is coming out, one calling for 250 tons of foundry iron for a Chicago user, and another being for 500 tons of low phosphorus iron for a Chicago user. An important producer in Chicago is quoting $28 and it is believed a lower figure would be named on attractive tonnage. Southern iron appears steady at $26 to $27, Birmingham, with nothing being sold for delivery here. A St. Louis purchaser has some excess tonnage which has been offered at about $29, Chicago furnace. Low phosphorus is about $38 to $40, eastern furnace, but some resale material is available in the West at the same price. Resale silvery from a Tennessee furnace is available at $43, delivered, Chicago, for 8 per cent.

Foundries Average 23 Per Cent

Cleveland, March 1.—Foundry operations of an average of 23 per cent of capacity are disclosed by a comprehensive survey of the situation just

Composite Market Average

Representing the Combined Average Prices Per Ton of Fourteen Leading Iron and Steel Products.

Yesterday, One Week, One Month, Three Months, One Year and Seven Years Ago

March 2, 1921	February 23, 1921	February, 1921	December, 1920	March, 1920	March, 1914
$46.65	$47.10	$48.81	$53.45	$65.47	$23.60

completed by prominent furnace interests and embracing the states of Ohio, Indiana, Michigan, northwestern Pennsylvania and western New York. This summary reveals that conditions over this important consuming territory correspond almost exactly to the melting rate in Cleveland and other Ohio centers, which was given in a preliminary statement published last week, pertaining to the same survey. In striking this average, the position of 100 to 150 foundries was ascertained by the furnace company making the examination. It is significant that nowhere was the rate of operations so low as in the automotive manufacturing districts, especially in Michigan. There the rate shown was 7 to 8 per cent below the average. This fact tends to belie the recent report of improvement in the automobile industry generally. The pig iron market continues to reflect the depressed condition among the foundries and sales are light and small. A price of $27 base valley has appeared more generally this week, and this has been done even on carload lots. Cleveland and nearby lake producers will quote down to this basis. The American Radiator Co. has been the most active buyer, particularly for Detroit, but it has not been found that it has taken much tonnage direct from the furnaces. The main lots closed for Detroit appear to have been resale iron and these obtained from various sources in the week have exceeded 1000 tons. n some of these cases it is reported as low as $25, Detroit, was done but producers have been unwilling to meet this figure. One producer in the week entered 700 to 800 tons in new orders at a range of $27 to $27.50, base furnace. A Barberton, O., consumer who is in the market for 500 tons of malleable was quoted $27.50, valley, but reports having placed this business to better advantage.

Lack of Demand Continues

Pittsburgh, March 1.—Even with the low prices available on basic and bessemer pig iron, there does not appear to be any measurable increase in buying of the steelmaking grades. Several inquiries are before sellers but mosty they represent only an effort of users to get a line on the market. Only a few sales are reported at $25 and $27, valley, respectively, involving from one to three carloads. On an inquiry for a carload of basic, $30, valley recently was quoted. The merchant interest which was first to establish the $25 and $27 levels and which reports closing on a fair proportion of the 16,000 or 17,000 tons figured on in February, states however that it declined a 3000-ton order for basic, offered at $25, valley, less commission. It is selling iron only to its regular customers. Since the few initial sales of 1000 tons each, this has involved only small tonnages. Another producer which quoted prices to protect its customers, likewise have refused some business. This involved some 2000 tons of high silicon basic offered at $25, valley. A Massillon, O., consumer, operating two of seven open-hearth furnaces, is reported as having received a price on a round tonnage of basic of $23, valley, but this cannot be confirmed here. Steelworks furnaces are understood to be willing to go to $23, valley, on what they term off-basic but small sales at $24 are the only ones reported. Intermittent sales of foundry iron continue to be made. Basic and bessemer averages for February compiled by W. P. Snyder & Co., were $25 and $27, valley, respectively. The American Radiator Co. is understood to have obtained a price below $26, valley, on the 500 tons of 1.75 to 2.25 silicon it purchased for its Titusville, Pa., plant. It is understood that $26 and $27 quotations received no consideration. A Pittsburgh foundry is reported to have closed on 100 tons of 2.25 to 2.75 silicon iron at $27.75, valley. Single carload sales are reported at $28, valley, some interests refusing to go below that figure even on a 500-ton lot. One prospective buyer of a carload reports he received a $26.50, valley, quotation. A few releases against old contracts are being received. The Standard Sanitary Mfg. Co. is expected to negotiate again soon for some round tonnages for both Louisville, Ky., and Pittsburgh.

While the Carnegie Steel Co. has 41 out of 59 blast furnaces in on Feb. 28, No. 6 of the Carrie group and No. 1 of the Farrell group have been blown out since, giving that company 39 blast furnaces in at present. This leaves one at Farrell and six at Carrie still in blast.

New York Inquiry Improves

New York, Mar. 1.—While actual selling of pig iron in this district has been limited to small tonnages during the past week, inquiry has improved considerably and, in addition to numerous small lots aggregating around 2500 tons, includes one lot of 1000 tons, another of 800, one of 500 tons, one of 300 tons, and others. All of these are for quick shipment excepting the 800-ton inquiry, which involves shipment over the remainder of the year. There is no assurance as to when these inquiries will result in business. Foundrymen, however, are speaking more hopefullv; business prospects look better to them, and some of them that only a few weeks ago said they would need no more iron for a year or more, are among those now inquiring. Prices on foundry iron do not show much change from a week ago. On eastern Pennsylvania iron the minimum price of the past week was $27, furnace, for 1.75 to 2.25 silicon, while in some cases this iron has sold as high as $30. The market now generally is regarded as $27 to $27.50 base furnace. In the Virginia district, the bottom of the market continues $28, furnace, for the 1.75 to 2.25 silicon grade, and iron can be had off stock piles at this level. During the past week a Buffalo maker offered to sell foundry at $28.50, base, furnace.

St. Louis Market Dull

St. Louis, Feb. 28.—No change worthy of note has occurred in the pig iron market in this district. Sales are confined to a few small tonnages for immediate use. Two carloads were purchased by an Iowa melter, and 150 tons by a Quincy foundry, the latter working on orders from the Texas and Oklahoma oil fields. Inquiries do not arouse much interest among sellers. Prices are uncertain and furnace interests are loath to lower their quotations. Every sort of excuse is being advanced by buyers to delay shipments. Foundrymen in the district declare that there is not the slightest sign of a revival of demand for their products. Stove interests have their warehouses filled at a time when they usually begin making stoves for the next fall and winter. One interest is carrying stoves in its warehouse for southern customers, partial payments having been made. Due to the cotton, tobacco and rice situations southern buyers are not taking anything like the normal quantities of goods.

Prices Further Decline

Boston, March 1.—With the continued absence of consuming demand, pig iron prices in New England have shown a tendency toward a lower level during the week. The orders which were placed are all for small tonnage and for prompt shipment but even these created considerable interest and secured low quotations. A Rhode Island melter bought 100 tons of No. 2X (2.25 to 2.75 silicon) in two lots including 50 tons from an eastern Pennsylvania furnace at $31.75, delivered, or approximately $26.50, furnace. An eastern Massachusetts consumer bought 350 tons and while the price has not been reported, it is understood to be in line with the present market. The order reflects a better outlook at the consumers' plant than has existed for some time. Foundries in general continue to melt about the same tonnage they were consuming a week ago. Prices of castings, however, have softened. The long expected rally in the foundry industry has not developed. The past week in pig iron has been quieter than any during February.

Some Sales at Buffalo

Buffalo, March 1.—The price on pig iron now is ranging from $28 to $30 base on sales of resale and furnace iron by furnaces. Resale iron is bringing $28 to $30 while furnace iron is being held for $30 according to producing interests. A broker sold 300 tons of No. 2 foundry, (2.25 to 2.75 silicon) for $28. This is equivalent to a base price of $26.75. Sales of approximately 1000 tons are noted by one furnace, the price ranging from $28 to $30 base. Another interest sold about 2000 tons, part of which was resale metal at $28 to $29 and part of which was $30 for the straight furnace No. 2 grade, (1.75 to 2.25 silicon). Malleable inquiry is light and there is very little placement. A question of $30 on 1000 tons failed to get the business. Some furnace interests are not endeavoring to compete even at the present market.

Prices Show More Firmness

Cincinnati, March 1.—Recent sales of pig iron indicate prices are firming up, particularly those of southern Ohio furnaces. Scattering odd-lot sales continue to be made, however, at current quotations. A number of carload sales in the week at $28 southern Ohio furnace are noted. Furnace representatives here insist, however, that with the cleaning up of practically all available resale iron little is available in the Ironton district below $29. One carload of southern Ohio iron was sold last Saturday at $30, and a Cincinnati dealer just booked an order from an Indianapolis melter for 500 tons of northern No. 2 foundry (1.75

to 2.25 silicon) for nearby delivery at $29, furnace. In the absence of buying and inquiries, southern iron likewise is more firmly held and Cincinnati dealers maintain that there is little if any to be had under $27.50, and quote the market at $27.50 to $29, Birmingham. It is reported one large manufacturing company in Hamilton, O., which has been operating full time has made a big reduction in its working force and will operate only five days a week. Cincinnati foundries are still tied up with the molders' strike.

Southern Market Dull

Birmingham, Ala., Feb. 28.—Lower prices have brought out but little business, and melters of pig iron continue buying from hand to mouth. General quotations for pig iron in this district are on a level of $27.50 for No. 2 foundry (1.75 to 2.25 silicon). It is reported that a 1000-ton order was accepted under that figure and some business is known to have been closed at $26.50 base. Some off-grade iron sold recently on a basis of $25. No consumer has yet made purchases to carry over a lengthy period. Accumulated stocks of foundry, basic and other iron in this district exceed 165,000 tons. The numerous small-lot sales in the past month, even with immediate deliveries urged, does not absorb the output, and this despite the fact that only five furnaces are on foundry iron.

The one active furnace of the group of five of the Woodward Iron Co. is down besides the ore and coal mines, pending an improvement in the pig iron market.

Ore Shipping

To Be Slow In Starting—Vessel Rates Not Yet Named

Cleveland, March 1.—The amount of Lake Superior iron ore consumed in January was approximately 1,000,000 tons less than in January, 1920, which in a measure explains the present dearth of interest in the ore market. The determination of ore prices as a preliminary to the season's business is held in abeyance pending an announcement in regard to vessel rates. A reduction is expected to be made in the rates, although a factor militating against reductions in ore prices is the fact that the interstate commerce commission has refused to suspend the increased railroad rates and dock charge in Michigan and Wisconsin. The commission has not passed on the reasonableness of the new rates. The entire rate structure in the Lake Superior district is subject to review on the mine operators' petition for a reduction, although the time for hearing has been postponed until some time in May. It appears now that the new rates in Michigan and Wisconsin will stand for the present season, at least.

The iron ore consumed by blast furnaces in January was approximately 3,700,000 tons, or about 360,000 tons less than in December. The amount consumed in January, 1920 was 4,685,000 tons. The ore on hand at furnaces Feb. 1, was approximately 25,000,000 tons, and at Lake Erie docks, 9,000,000 tons. The total tonnage on hand at furnaces and Lake Erie docks Feb. 1, 1920 was 32,000,000 tons.

Coke Output Still Lower

Additional Ovens Lighted, but General Demand Declines—More Frick Plants Down—Nominal Price of Furnace Coke Now $4.50

Pittsburgh, March 1.—Intermittent improvement only is noticeable in connection with independent ovens in the beehive coke region. The average, however, remains practically the same although production continues on the decline. One of the latest developments is the lighting of 80 additional ovens. The Washington Coal & Coke Co., also recently lighted 50 additional. This company has reduced its foundry coke price from $6.50 to $6 ovens and reports fairly numerous spot sales of limited tonnages. With a release it has just received on a furnace coke contract involving about 20 cars per day, together with another furnace coke contract involving 10,000 tons monthly which was not suspended, these sales are sufficiently numerous to justify the increased operations. On the other hand, operations of the H. C. Frick Coke Co., are being further curtailed, the latest curtailment involving the closing down last week of 1841 ovens in 25 plants. This was a reduction of 16 per cent from the preceding week's rate of operation. Practically no spot market for furnace coke exists except insofar as it is created by the minimum established by certain operators, namely $5 and $5.50, some even going higher without sale. The nominal market is $4.50 but some grades are quoted at $5, ovens, depending on the grade. Some coke for heating purposes is being sold at $4, ovens, and several carload sales are reported. Distress coke often is available at $4, and one exceptional case recently was noted where coke on track which had to be moved quickly went at $3.75 oven. Production according to the *Connellsville Courier* for the week ending Feb. 19 was 135,320 tons as compared with 146,140 tons the preceding week.

Market on Competitive Basis

Boston, March 1.—For the first time in several years, the coke market in New England is on an open competitive price basis. Both of the by-product producers have adopted aggressive policies of selling. Beehive coke is the chief competitor as the two local companies in most cases avoid cutting against one another. Good grades of Connellsville foundry coke have been offered during the week at from $5.50 to $6, Connellsville, ovens, and Providence coke is understood to have met these prices. The New England Coal & Coke Co. has made some sales during the past week at $12.85 which is approximately a $6.50 Connellsville base, but it is understood this company would go considerably lower to meet competition on any sizable tonnage. The price range at present on all grades of foundry coke is from $11.75 to $12.85.

Demand Shrinks

New York, March 1.—A further shrinkage in demand has been the only change in the coke market here during the past week. Sales are restricted to prompt lots and usually involve one or two carloads each. Prices on beehive foundry coke range from $5.50 to $7, Connellsville, the desirable brands in most cases being obtainable at $6 to $6.25 or $6.50. On by-product foundry coke the Seaboard By-Products Coke Co., continues to ask $6.50, Connellsville, on February shipments and has not yet announced its price on March shipments. Some furnace coke has been sold in the East during the past week at $4.75 to $5, Connellsville.

Tonnage Booked Is Small

Cincinnati, March 1.—If the order books of Cincinnati sellers of coke were merged into one it is estimated that the total business shown thereon beyond April 1 would not amount to more than 1000 tons. Spot buying recently has run along about the same, relatively, as pig iron, the tonnage being decidedly small. Foundry is very low and furnaces are using but little coke direct from the market.

Market In South Quiet

Birmingham, Ala., Feb. 28.—The coke market in the South is very quiet. New business is light and inquiries few. Practically all coke now being made in this section is at by-product coke ovens. The recent temporary settlement of the coal miners' strike in Alabama is the oustanding event of interest in the coal and coke trade. The leaders of the United Mine Workers of America and representatives of the coal operators referred the strike to governor and he named a commission to hear statements from the two sides. The governor after reviewing this data will render a decision. The coal market does not warrant any increase in production, and so far only a few of the union men who went out on strike have been re-employed. Coal production for the week ending Feb. 19, before the strike was ended, amounted to 260,822 tons, against 246,888 for the week previous.

Trend Still Downard

St. Louis, Feb. 28.—Developments in the coke market are of a negative character. Business is confined to small orders for immediate shipment. Prices continue soft, with the trend steadily downward. Supplies in hands of melters are large, both here and in the West and Southwest. Demand from smelters has almost disappeared, and with many of the foundries down, the outlook is not promising.

Furnace Wages Cut

Cleveland, March 1.—Reduction of 20 per cent in wages to conform to the level now in effect at other independent works have been posted at the various blast furnace plants of the Hanna Furnace Co. The rate of labor wage now is 37 cents an hour. The company now is operating two stacks, one at Buffalo and one at Leetonia, O.

Bar Business Still Light

Prevailing Quotations on Steel Bars Are From 2.00c to 2.10c Pittsburgh—Lower Prices Offered on Refined Iron Bars

Chicago, March 1.—While some scattering sales of soft steel bars are being made, the volume of business is light and mills are reducing their backlog steadily as production exceeds bookings. Specifications are good, holders of contracts apparently not seeking to evade their responsibilities. Financial aid to railroads by congress is expected to give them some funds on which they can increase their present schedule of buying. Low prices on bars which have been variously rumored at 2.38c, Chicago mill, or lower, appear to have disappeared and the lowest independent quotation at present appears to be 2.48c, Chicago mill. The Illinois Steel Co., continues to maintain its price of 2.63c, mill.

Some small lots of bar iron are being placed by consumers but most producers are idle at present, waiting until sales have resulted in an accumulation of tonnage. The market apparently now is about 2.60c to 2.65c, Chicago mill, though better might be done were an attractive tonnage offered. Demand for hard bars is absent and all mills producing this material are idle.

Sales at 2.10 to 2.25c

New York, March 1.—Demand for steel bars is smaller than for most other finished products in this district at present. On the most important orders 2.10c base Pittsburgh has been done during the past week. As a matter of fact, however, most of the current business is going at 2.15c to 2.25c. Business of a character to bring out bottom prices is lacking.

Claims to Have Price of 1.90c

Philadelphia, March 1.—Steel bar inquiry is very small and reports indicate demand for this product is poor throughout the country. Current business is going at 2.10c to 2.25c. There is lack of inquiry of the character that recently brought out 2.00c in the New York district. Consumers say they have been assured by mills that the latter would accept good sized tonnages as low as 1.90c, Pittsburgh, but no business has developed at this figure, or anything like it.

Recent shading of bolt, nut and rivet prices has not spread and no more shading was reported in the past week. Some fair sized business was booked on the current basis of 60 off for large machine bolts.

Some Tonnage Is Released

Cleveland, March 1.—Some of the forging plants doing work for the automotive industry in this country are releasing some business to the mills, but this is not in large amount. Little business in steel bars is moving. While it is indicated that 2.00c Pittsburgh, or 2.24c Cleveland can be done on attractive tonnage, the common and open figure is 2.10c Pittsburgh.

Lower Levels Reported

Pittsburgh, March 1.—While 2.10c, base, Pittsburgh, appears to be the prevailing quotation made on any inquiries for merchant steel bars, it is conceded that a sizable tonnage probably would develop a 2.00c price. It is reported that this already has been made, but the business so far has not been traced. The Carnegie Steel Co., continues to hold to 2.35c and is booking new orders as well as receiving specifications against old contracts.

On refined iron bars some slightly lower prices are offered due to the new puddling rate which went in effect March 1. A few inquiries are being issued but these mainly are considered tentative propositions since orders do not develop.

Competition to the Chicago maker of common iron bars quoting 3.06c, delivered, Pittsburgh, now is offered by eastern mills which are quoting 2.70c here, or 2.35c base with a 35 cent freight rate. Inquiries are few.

No Tonnages Offered

New York, March 1.—The eastern bar iron market continues nominally at 2.35c, Pittsburgh. This relative steadiness, however, may be attributed principally to the fact that there is no real tonnage before the market. Trade interests are of the opinion that concessions of 10 to 15 points might be obtained in some quarters were a good tonnage to appear. Operations of eastern mills continue at around 15 to 20 per cent of capacity.

Buffalo Mill May Suspend

Buffalo, March 1.—Three bar mills in the Buffalo district are operating but there is not sufficient business ahead to warrant continuous production. One may go down this week, while the others may roll well into the middle of the month. The open price is reported from 2.15c to 2.35c Pittsburgh. Little business is reported.

Shafting Orders Limited

Pittsburgh, March 1. —Only a limited amount of cold-finished steel bars is moving. Current business is on a hand-to-mouth basis and no users are anticipating their requirements even one week hence. The majority of the mills in this district are quoting 3.60c, base, Pittsburgh, although 3.25c continues to be heard as applying to certain limited tonnages available from jobbers. One inquiry originating with an eastern broker calls for 50 tons of ¼-inch rounds. An order booked recently by one of the larger independent makers called for four or five carloads and is understood to have originated with a shipbuilder.

Bolts and Rivets Shaded

Chicago, March 1.—Manufacturers of bolts and nuts find demand from their users continually declining and business is sufficient only to cause their plants to operate at about 40 per cent of capacity. Under the slack demand makers are anxious to take business and as a result considerable shading is being done, although it is not yet sufficiently extensive to cause discounts to be increased generally.

New Inquiries Are Few

Pittsburgh, March 1.—Inquiries for units, bolts and rivets are scarce and orders likewise are few and far between. Operations in the plants of makers are on an increasingly lower scale. One of the larger companies which has been able to operate 70 per cent for some time contemplates reducing this scale during the present week. While it is understood that lower prices are being quoted on large specifications, both east and west of Pittsburgh, no opportunity to do so has developed here. Jobbers are buying only a little stock to cover absolute requirements, and while some makers of rivets are holding to 4.00c and 4.10c for structural and boiler rivets, respectively, others are quoting 3.90c and 4.00c and it is reported that 3.80c has been done to meet competition. On the smaller sizes 60 and 10 off appears to be the general quotation.

Rivet Prices Are Weak

Cleveland, March 1.—Rivet market conditions are weak. A further reduced price of 3.90c Pittsbugh for structural and 4.00c Pittsburgh for boiler rivets continues to be shaded. Makers in this district will meet these lower prices on desirable business.

Alloy Demand

Is Small on All Grades—Some Resales Are Reported

Philadelphia, March 1.—The demand for ferromanganese and spiegeleisen is small. Ferromanganese is obtainable first hand at $90 to $95, delivered, and the last sales of spiegeleisen were at $34 to $37, furnace. Resales of both metals have been made recently at considerably under these prices but these concessions had no market significance.

Current Sales Small

Pittsburgh, March 1.—Current sales of ferroalloys of all kinds continue extremely limited. Ferromanganese moves in carload lots only. An Erie user bought a carload of 76 to 80 per cent material at a price considerably lower than $95, delivered. It has been quoted $100 delivered, on 78 to 82 per cent material. Another buyer is in the market for a carload of 76 to 80 per cent ferromanganese and the prevailing price appears to be $92.50, delivered, although resale English material is quoted at $90, delivered. Domestic producers continue to quote $105, delivered, on American 76 to 80 per cent material.

Several inquiries involving a carload each are current for 50 per cent ferrosilicon. Some furnaces are quoting $95, delivered, although as low as $92 and $93 continues to be heard. One Mahoning valley user withdrew a carload inquiry which it issued recently. Considerable resale ferrosilicon is available at least 5 per cent below the prevailing market prices. Pittsburgh steel casting interest likewise deferred action on its tentative inquiry for one

ferrosilicon because the prices it received were so varied namely from $46 to $65, delivered. The standard price is $56.30.

Both imported and domestic ferrochrome are available at 15 cents from warehouse. Other quotations vary from that figure to 16 and 16½ cents on 6 to 8 per cent carbon material. The former price of 15 cents applies to 4 to 6 per cent contained.

Little or no spiegeleisen is being purchased in this district. It is understood that lower than $35 can be obtained.

Little Alloy Inquiry

Chicago, March 1.—Both ferromanganese and spiegeleisen are unusually quiet and consumers apparently need no further supply of either. One offer of some resale ferrosilicon at $90, delivered, has been heard of, but no sale followed, as far as is known.

Steel Corporation Closes

New York, March 1.—Business in special alloys is dull, alloy steel makers holding off pending more definite indications of future business. Some small sales of 50 per cent ferrosilicon are reported at $93 to $95, delivered. It is also rumored the Steel corporation has closed for six months' requirements of this alloy. Prices generally remain unchanged in all descriptions, with no important contracts reported.

Sales Manager Named

T. W. Oberhauser, who for the past three years has been manager of sales at Pittsburgh for the Wheeling Steel & Iron Co., Wheeling, W. Va., selling tubular goods, tin plate and light sheets, became Pittsburgh district manager of sales for the Wheeling Steel Products Co., Wheeling, W. Va., on March 1. Mr. Oberhauser was affiliated with the Crane Co., Chicago, for 10 years prior to becoming associated with the Wheeling Steel & Iron Co. in 1918. The Wheeling Steel Products Co., with general offices at Wheeling, W. Va., is the exclusive agent for the Whitaker-Glessner Co., the Wheeling Steel & Iron Co., and the La Belle Iron Works, Steubenville, O., in the sale of pig iron, semifinished material, plates, sheets, tin and terne plate, tubular goods and cut nails.

Puddlers' Wages Reduced $3.60 a Ton

Puddlers' wages for March and April have been reduced from $18.62 to $15.02 a ton, in accordance with the bimonthly bar iron wage adjustment made at Youngstown Feb. 28 by representatives of the selected mills and the Amalgamated Association of Iron, Steel and Tin Workers. This reduction of $3.60 a ton was brought about by a decline in the average sales price from 3.50c to 2.80c. Comparisons of the bar iron base follow:

	1921	1920	1919
January-February	2.80c	2.70c	3.10c
March-April	....	3.00c	2.75c
May-June	....	3.25c	2.50c
July-August	....	3.40c	2.50c
September-October	....	3.55c	2.50c
November-December	....	3.50c	2.55c
Yearly average		3.233c	2.65c

Plate Buyers Are Waiting

Hold Back on Larger Tonnages Pending Action by Steel Corporation —Eastern Mill Operations Increase—Low Prices Reported

Philadelphia, March 1.—Very little plate business is reported here. In fact authoritative reports from all over the country indicate that demand in the East is smaller than anywhere else. Numerous consumers say they have been assured by the mills that the latter would accept good sized tonnages of plates, shapes and bars at 1.90c to 2.00c, but outside of recent sales of bars in the New York district at 2.00c, no such prices have been done. In fact, 2.10c is the minimum price so far done on plates, or quoted in connection with any definite inquiry and the plate business of the past week went at prices ranging from 2.10c to 2.40c, Pittsburgh, depending on size. Despite the tendency of consumers to wait to see whether the Steel corporation will reduce prices, enough plate orders have accumulated to make some difference in plate mill operations. The Alan Wood Iron & Steel Co. will start its plate mill next week. The Midvale Steel & Ordnance Co., which a week before last booked plates and other products to 40 per cent of capacity of its Johnstown plant, booked an even larger percentage during the past week. Other independents do not seem to have done as well. The bid of the Pittsburgh-Des Moines Co., on tanks for the shipping board is interesting to consumers who hold that this interest must have figured plates at less than 2.00c. The fact is the company stated in its bid that its figure was based on plates in stock, showing that its quotation on the tanks reflected a plan for liquidating the steel. Considerable interest is manifest in opening at Hog Island tomorrow of bids on 110,000 tons of steel. While the material which is offered for sale is listed as scrap it is understood to have a high salvage value.

Few Inquiries In East

New York, March 1.—Plate demand continues of small proportions in this district. The principal inquiries now before the trade here include a lot of 1000 tons for an oil company and a smaller tonnage for the John W. Sullivan Co., New York, which just has booked a contract for building a fireboat for the city of Philadelphia. Based on current business the plate market here may be quoted at 2.15c to 2.25c, base, Pittsburgh, while higher is being done on small orders in some cases.

Reports here indicate that the Pittsburgh-Des Moines Steel Co. was the low bidder on the 12 oil tanks requiring about 2500 tons for which the United States shipping board opened figures at Washington last week. The bid of this interest was approximately $126,000, the next highest bid being about $147,000 and the highest about $316,000.

Large Order Expected

Pittsburgh, March 1.—One of the largest orders for plates contemplated in several weeks is expected to be placed by the Pittsburgh-Des Moines Steel Co. It was low bidder of 41, six of which were shipbuilders, on twelve 200-ton tanks for the United States shipping board, on which proposals recently were opened, and which involves approximately 2400 tons of plates. Another current inquiry calls for 310 tons of plates and on this various prices as low as 2.10c, base, Pittsburgh, have been quoted. Several other 100 to 300-ton inquiries are noted. It is stated that a sizable tonnage with attractive specifications probably would develop a 2.00c, base Pittsburgh, price, representing a reduction of $13 per ton from the price still held by the Carnegie Steel Co.

Cars Offer Some Plates

Chicago, March 1.—Of about 30,000 tons of carbuilding material now pending in the Chicago district, nearly half is steel plates which undoubtedly will go to mills at Chicago. Slowness in placing this business keeps this tonnage off books for the time being, but undoubtedly it will be realized as actual business before much more time has elapsed. The Illinois Steel Co. maintains its price of 3.03c, Chicago mill, on plates, while independent makers will book at 2.63c, Chicago. The tonnage now being taken is relatively small.

Some Releases

Continue Against Tin Plate Contracts —Price Concessions Are Reported

Pittsburgh, March 1.—An improved note is sounded in the tin plate market by the continuance of small releases against old contracts as well as a few new inquiries. For the most part these originate with canmakers and on Monday of this week one of the larger independents received, among others, specifications for March delivery on approximately 10,000 base boxes. The American Sheet & Tin Plate Co. continues to operate around 70 per cent of capacity, receiving additional releases, some reinstatements, and it reports that the outlook is slightly better than it is in connection with sheets. On production plate the price named by independents is the same as by the American company, namely $7 per base box of 10 pounds, Pittsburgh, although reports of concessions under that figure are heard but these are said to apply to stock plate which must be moved. Prices from $5 up have been heard, particularly on tin plate originally intended for export.

Hoops and Bands Quiet

Pittsburgh, March 1.—Practically no inquiries are current for hoops and bands and in the absence of prospective business the price from rollers continues at 3.05c, although it is generally conceded that 2.80c would be obtainable if a tonnage developed.

Scrap Dullness Continues

Prices Generally Weaker Although at Boston and Buffalo Heavy Melting Steel Advances—Would Reduce Range Between Pig Iron and Scrap

FOR COMPLETE SCRAP PRICES SEE PAGE 660

Chicago, March 1.—With consumers entirely out of the market, there being no buying worthy the name, the scrap market is stagnant and weak. Quotations at present are lower than the level attained early in 1919, which has been the record for several years, and while the bottom seems to have been reached, recent experience forbids prophecy as to the future. Railroads and industrial companies find selling prices so low it scarcely pays to pick up and handle present accumulations. No class of buyers is in the market for material, and quotations are diffiicult to determine. The Louisville & Nashville has issued a list containing 4600 tons, the Baltimore & Ohio 1000 tons and the Michigan Central an open list. As a matter of interest, although the scrap undoubtedly will not come to this market, the Pennsylvania offers 17,000 tons.

New England Market Inactive

Boston, March 1.—The demand for scrap in New England is still as low as ever, but the situation is sufficiently encouraging to create a slightly better interest among dealers. Buying is largely for storage purposes and as a result the price range is wide. Small lots may be picked up at exceedingly low figures but any appreciable tonnage is able to command slightly better figures than a week ago. Heavy melting steel which was $9.50 the middle of February, is now better represented by $10, as the large dealers are willing to pay this price. Mills are paying $13 for rerolling rails but the future appears sufficiently encouraging to warrant some dealers paying as high as $15 for storage. Cast scrap trading continues at about the same level established throughout February, although inquiry during the last few days suggests improvement in the future. Evidently foundry stocks in some cases are being exhausted. Four or five cars of No. 1 machinery scrap were sold to Massachusetts consumers at prices ranging from $23 to $25 delivered, depending upon location.

Market at Standstill

New York, March 1.—As a result of open weather, operations at the local scrap yards are somewhat better. However, they are far from active, as buying continues virtually at a standstill. With the exception of a few minor changes, prices are steady. Heavy melting steel for eastern consumption continues at $9.50 to $10 f.o.b. New York; machine shop turnings, $8.50 to $9; heavy cast, $18 to $19, and machinery cast at $19 to $20. Iron car axles are off about $1, and steel axles nominally 50 cents, holding respectively at $32 to $33, and $17.50 to $18.50.

Demand Shows Improvement

Philadelphia, March 1.—The demand for heavy melting steel and forge scrap has improved somewhat in eastern Pennsylvania territory. Current buying however involves only moderate sized lots and the total is comparatively small. Prices are unchanged generally though in cupola cast and low phosphorus punchings, they are lower.

Position Technically Weaker

Pittsburgh, March 1.—While prices on scrap register no change from a week ago the position is technically weaker. This is due to the continued restricted operations of the Steel corporation and the spasmodic operations of the independent companies. The La Belle Iron Works, which has been taking tonnages of borings and turnings, issued orders last Friday to hold up further shipments. The West Leechburg Steel Co., Brackenridge, Pa., is offering $16.50 for heavy breakable cast but sellers claim to be unable to locate tonnages which will permit them to lay it down at less than $19. The Westinghouse Electric & Mfg. Co. recently disposed of between 1500 and 2000 tons of scrap, including five or six cars of turnings and borings, 700 tons of heavy melting steel and 250 to 300 tons of compressed sheets, at attractive figures. Shipments from automotive sources still are limited and most producers continue to hold for higher prices. Where scrap is available, offers by bidders are so out of line with the idea of the producers, the latter decide to hold the scrap in their yards or bins, for a rise in price. Sellers maintain the spread between pig iron and scrap is abnormally large.

Bids will be taken by the Pennsylvania railroad at Philadelphia, until 9 a. m. March 8 on 17,840 tons of scrap which includes 2750 tons of No. 1 heavy melting steel, 1100 tons of No. 1 railroad cast and 1525 tons of No. 1 wheels as well as 1575 tons of No. 1 railroad wrought. The list also includes 1400 tons of No. 2 railroad wrought as well as 2000 tons of unassorted scrap.

Heavy Melting Price Weaker

Buffalo, March 1.—During the past week, one mill was willing to pay $14.50 for scattered tonnage of heavy melting steel but the top price now offered is $14. Little selling is being done and the market is really a nominal one. Some little stove plate is moving occasionally. A few carloads of turnings and cast scrap have been sold. Mill operation has been reduced here and the scrap output is lighter.

Hope Demand Will Appear

Cleveland, March 1.—While no iron and steel scrap is moving and in consequence the market is nominal, it is coming to be the general belief among dealers that quotations are close to if not actually at the bottom. Reports of some improvement in plant operations lead to the hope demand will appear in the near future. So far, however, no inquiry has appeared.

Prices Decline Generally

Detroit, March 1.—With the exception of cast borings a general decline in prices has taken place in the Detroit iron and steel scrap market. Heavy melting steel is down to $10.50, heavy axle turnings to $10, and machine shop turnings to $5. Cast borings have been advanced 50 cents, to $7.50. Miscellaneous rails were quoted at $13.

Market Is Dull

St. Louis, Feb. 28.—No railroads before the market for scrap the past week. The industries continue out of the market, and a large percentage of both mill and foundry capacity is idle. Dealers are purchasing nothing for their yards and several who accumulated material a few weeks ago are now trying to dispose of part of their holdings. Prices hold steady. Heavy melting steel is plentiful and weak, and cast grades are dull. There is some inquiry for stove plate, which is scarce and about the only item displaying any resistance to the general weakness. A small tonnage of relayers was offered by a southern railroad, but found no takers here.

Southern Market Still Quiet

Birmingham, Ala., Feb. 28.—No change is in sight in the southern scrap iron and steel market, and dealers are uncertain as to when business will improve. The largest consumer of heavy melting steel in the Birmingham district, the Gulf States Steel Corp., buying on the open market, is not operating its open-hearth furnaces. Only the nail and wire mills are being run. Weakness still is noted in quotations. Dealers having bought as much old material as they will need for a while are not active in the market.

Coke Consumption Low

The new blast furnace of the St. Louis Coke & Chemical Co., at Granite City, Ill., which was first placed in operation Feb. 9, produced foundry and malleable iron until Feb. 27 when it was turned over to basic iron. The coke on which this furnace has been operating is made from 90 per cent Illinois coal and 10 per cent Pocahontas coal. Up to the present time the coke consumption has amounted to 50 per cent of the iron, which is believed to be a record for a new furnace, in view of the fact that no scrap was used.

Strip Orders Released

Pittsburgh, March 1.—Receipt of a few releases against old contracts for hot and cold-rolled strip steel creates a better feeling than has existed in several weeks in this market. Some new inquiries likewise are current, one of which originated in the east and called for 100 tons of hot-rolled strip steel, and probably a dozen involving similar and smaller tonnages have been received from Canadian consumers. So far as can be learned no sizable sales have been consummated recently at prices below 3.30c and 6.25c on hot and cold-rolled, respectively, although

it is made plain that concessions to 3.00c and 6.00c levels would be made in order to obtain tonnage business. It is reported that a prospective purchaser of cold-rolled strip steel recently was quoted 5.65c but this is not traceable here. Some of the releases in question come from automobile companies but sizable tonnages are not involved so far.

Reduced Prices

Established by Makers of Wrought Iron Pipe—Demand Fair

Pittsburgh, Mar. 1.—Effective March 2, the A. M. Byers Co. has reduced its prices on wrought iron pipe to conform to the prices established one day earlier by the Reading Iron Co. This was possible because of lower costs due to the change in the puddling rate which became effective March 1. In the case of the Reading Iron Co. the reduction amounts to $8 to $10, while in the case of the Byers company the reduction is slightly greater, due to the fact that its prices were a trifle higher. The discount on ¾ to 1½-inch buttweld iron pipe is 29½ on black and 13½ on galvanized. The complete new schedule of prices appears on page 664, this issue.

The demand for steel tubular goods continues at a fair rate, although operations among the mills are not so heavy as a few weeks ago. Some of the larger independents here continue to operate as near 100 per cent as possible, which continues true of the National Tube Co. One inquiry recently issued called for 30 miles of standard 10 or 12-inch pipe and one Pennsylvania user asked for prices on 16,000 feet or about three miles of 8-inch line pipe which it wanted to pipe gas from its well to its plant.

The city of Pittsburgh will take bids until March 8 on 9, 15 and 24-inch cast iron pipe.

Demand Increases

New York, March 1.—Improved activity is noted in the eastern cast iron pipe market. Private inquiry is in better volume and municipalities are showing greater interest. At present, at least five municipal tonnages are before the trade. While a formal award has not been made, this city closed bids Feb. 21 on 500 tons of 12-inch pipe. The United States Cast Iron Pipe & Foundry Co. was low bidder, with an offer of $67.10 per net ton, f.o.b. New York. This city, on Feb. 23, also closed bids on general construction work, involving approximately 500 tons of pipe.

Some Interest In West

Chicago, March 1.—Some activity is evident in cast iron pipe but the unwillingness of consumers to buy freely at present prices is indicated by various circumstances. After bids are taken awards are slow to come out and in some cases bids are entirely rejected. This attitude and the scarcity of actual inquiries results in the market being decidedly weak and some shading is being done. Bids were taken at Detroit last week on 589 tons of pipe on which the United States Cast Iron Pipe & Foundry Co. was low bidder.

Sheet Competition Keen

Underbidding Noted Among Mills in Mahoning Valley—Operations Increase—New Specifications from Motor Car Makers Lacking

Youngstown, O., March 1.—Competition in sales of all grades of sheets, but more particularly black and galvanized, continues keen with occasional underbidding in prices. A week ago the nominal asking price of galvanized in this district was 5.40c; today it generally is 5.25c, a reduction of $10 a ton below the industrial board figure. Some mills continue to adhere to 5.35c, while others have cut under 5.25c. A carload of galvanized sheet was billed to a Cincinnati consumer at 5.15c, or $12 a ton less than the industrial board price. While the nominal asking price of black sheets generally is 4.10c, still evidence is cropping out that on gages adapted to tin mill practice certain sheetmakers are waiving extras as to sizes to get business. Quotations from one or two mills here perhaps would not top 4.00c for black, on a fair tonnage. Blue annealed sheets continue to be quoted generally at 3.30c. In no case is the volume of business heavy for any grade nor is much inquiring being done. While operations were confined to 5 per cent of capacity last week, the accumulation of orders warranted a considerable increase this week.

Releases Are Spasmodic

Pittsburgh, March 1.—The present demand for sheets is at a low ebb although releases against old contracts continue to be received from time to time. The preference at present seems to be for galvanized sheets and the releases were comparably heavy early this week, with some slight demand for milk can stock. A few of the releases continue to come from Michigan automobile manufacturers. A few telegraphic shipping orders come in showing that certain users are anxious to obtain sheets. The American Sheet & Tin Plate Co. this week is operating below 70 per cent of capacity and is able to roll sheets for stock in sufficient quantities to make prompt shipment on hurry-up orders. Operations among the independents are at a low rate, probably around 30 per cent. One mill reports the receipt of a few less than carload inquiries for corrugated sheets. The lowest price heard on black sheets is 4.00c. It is understood that a concession of $2 a ton under that figure to 3.90c recently was made, although the report is not traceable here. It is conceded that on a tonnage inquiry the 4.00c figure probably would apply, representing a reduction of $7 per ton under the industrial board price of 4.35c, base, Pittsburgh. Galvanized and blue annealed continue to be quoted from 5.35c and 3.20c, base Pittsburgh, to 5.70c and 3.55c, with only small lots under negotiation. Tonnage inquiries undoubtedly would bring lower levels. One favorable sign in the situation is the reinstatement of several orders which had been canceled or indefinitely suspended.

Buffalo Mill Resumes

Buffalo, March 1.—The Seneca Iron & Steel Company has resumed operations on a 50 per cent basis. Business in sheets has improved and inquiries are increasing.

Market Holds Steady

Chicago, March 1.—While buying of steel sheets is light and much below the normal volume, some business continues to come to the mills. The total is larger that that of other finished products. The Inland Steel Co. is operating 10 of its 18 sheet mills and has sufficient business to maintain that rate the first half of March. Present volume of business is not sufficient to attract low quotations, and the bottom of the market seems to be represented by 3.63c, Chicago, for No. 10 blue annealed; 4.38c, Chicago, for No. 28 black, and 5.63c, Chicago, for No. 28 galvanized. On some attractive tonnage shading is occasionally done, but not to exceed $1 per ton, as nearly as can be determined.

More Concessions Reported

Philadelphia, March 1.—The usual run of sheet business here is going at concessions of $5 to $7 per ton. Blue annealed is 3.20c to 3.30c, base, Pittsburgh; black, 4.00c to 4.10c, and galvanized 5.25c to 5.35c. In some cases concessoins of $11 to $14 per ton are reported, but it is believed these are restricted to resales. Business is small, and action in a good many cases held up due the general belief of the trade that the Steel corporation will lower prices soon.

Warehouse Prices Drop

Cleveland, Mar. 1.—Jobbers report the iron and steel warehouse market in this district is without foundation in the matter of prices. Reports persist that concessions are being granted which in many cases equals the price of material from mill. Some quotations consequently are normal. During the week a leading jobber in sheets dropped his price on galvanized $9, on black sheets, $7, and on blue annealed, $5 a ton. Galvanized sheets are now quotable at 6.50c; black at 5.25c and blue annealed at 4.30c.

Improved Demand Is Reported

New York, Mar. 1.—An improved demand for structural shapes and reinforcing bars is reported in the local warehouse market. This is attributed to better weather conditions. Trading generally is quiet, with prices unchanged. This inactivity in conjunction with declining mill prices, is causing jobbers to buy sparingly. Stocks everywhere with the possible exception of the Waverly warehouse, are in excellent shape.

Expect Further Price Cuts

Buffalo, March 1.—Improvement is noted in the local warehouse market. There is a more optimistic trend. Transactions have increased and tonnage demand is better. Business is coming in from outside the territory. A belief is entertained here that prices will be further reduced.

Structural Buying Is Slow

Larger Projects Held in Abeyance While Smaller Jobs Are Numerous —Building Season Approaches with Little Work in Prospect

Chicago, March 1.—Building operations are slow in going forward as the season approaches when most activity should be in preparation. Closing of projects requiring structural material is on the decrease rather than the increase. Only two projects were covered in western territory recently, one being a high school in the Northwest and the other a coal bridge to be erected in Porto Rico by a Chicago engineering firm. Neither tonnage was of importance. Prospective business of an attractive nature is also absent and business on the architects boards does not move into the hands of builders with any speed. Independent makers of structural shapes are quoting 2.58c, Chicago.

Strike Still Interferes

Boston, March 1.—The labor situation in New England and particularly in Boston is still unsettled and in consequence practically all new building work is being held up. One of the largest fabricators in the Boston district reports no inquiry whatever and all old work shut down because of the Boston strike. Prices still are soft.

Fair Demand in East

New York, March 1.—Demand for structural shapes is better in this district than for plates and bars. While few large lots are included, numerous orders for shapes are being placed involving from a carload up to 100 tons. Prices on the most important tonnages range from 2.15c to 2.25c, base, Pittsburgh.

Awards Still Held Up

Pittsburgh, March 1.—While the larger awards still are held up due to the fact that varied prices on shapes are available, a few smaller jobs have been let. The American Bridge Co. received a rush order from the Louisville & Nashville for 350 tons to replace a span of a bridge over the Barren river which recently was wrecked. Two jobs involving 100 and 200 tons, respectivley, recently were taken by the Memphis Steel Construction Co. A better volume of inquiry exists but each is given special consideration when it comes to price. The lowest quotations developed here are 2.10c and 2.15c, base, Pittsburgh.

Plenty of Small Work

Cleveland, March 1.—Numerous small construction jobs are active in this district while several larger projects, for which bids were submitted formerly or which have been postponed from time to time, still are held in abeyance. Only one award of any size has been made, involving 400 tons, but the identity of the work has not been disclosed. Two schools for Cleveland, a hotel at Akron, an apartment hotel for Cleveland are being figured now. On one sizable job here structural steel was quoted 2.15c, Pittsburgh.

Expect Corporation to Reduce

Philadelphia, March 1.—While shape business in other districts is reported improved, sales here continue in comparatively small volume. The usual run of orders are bringing 2.25c, base, Pittsburgh. On larger tonnages, 2.10c is quoted, but several consumers say the mills have assured them they would go as low as 2.00c and 1.90c, Pittsburgh, on large tonnages of shapes, plates and bars.

CONTRACTS AWARDED

Two highway bridges at Essingham, Ill., 153 tons, to Northwestern Bridge & Iron Co.

High school building at Luverne, Minn., 128 tons, to L. D. Sisson Co., Minneapolis, Minn.

Coal bridge for Porto Rico, 110 tons, awarded to unknown fabricator by Mead, Morrison Mfg. Co.

Bridge span, Louisville & Nashville railroad, 350 tons to the American Bridge Co.

Building, Mayer Air Craft Co., Bridgeville, Pa., 100 tons to the Memphis Steel Construction Co.

Tanks, Spencer Kellogg Co., Buffalo, 200 tons to the Memphis Steel Construction Co.

Two bridges for the town of Catskill, N. Y., 100 tons to the McClintic-Marshall Co., Pittsburgh.

Reconstruction work on Sixteenth street bridge, Chicago, for the New Fork Central railroad, 200 tons to the McClintic-Marshall Co., Pittsburgh.

CONTRACTS PENDING

Seaplane hangar at San Diego, Cal., for bureau of yards and docks, 424 tons, bids asked.

Ten-ton coal bridge at Duluth, 650 tons; award to be made this week by Mead, Morrison Mfg. Co.

Office building at Fifty-eighth street and Broadway, New York, for Dr. John Harris, 1000 tons. Contract pending.

Various bridges and other improvements, 347 tons; bids to be opened March 8 by Oregon State Highway commission, Portland, Oreg.

Two schools, involving 300 tons, board of education, Cleveland; bids being taken.

Commodore Perry Hotel, Akron, about 3000 tons, bids being taken.

Wade Park Manor hotel, Cleveland, 2500 tons; bids deferred.

International Nickel Co., plant, Huntington, W. Va., 2500 tons, again being figured.

Seek Concrete Bars

Pittsburgh, March 1.—A few inquiries are developing for reinforcing concrete bars, most of which originate in the Middle West. These call for tonnages from 100 tons up to 200, the latter not being very numerous. Several companies are quoting 2.35c, base, although a disinclination to close is noted and concessions in line with those offered on merchant steel bars are being made to obtain the business.

Low Price Is Shown

Cleveland, March 1.—On a lot of 450 tons of reinforcing bars rolled from billets for the new Cleveland city hospital, the Bourne & Fuller Co. was a low bidder on the price of $50 per ton delivered. It is figured out that this price, eliminating extras, trucking, etc., is equivalent to about 1.90c to 2.00c Pittsburgh.

Car Orders

Pending Require Approximately 20,000 Tons of Finished Steel

Chicago, March 1.—Although some car inquiry recently placed with the builders has given the market a better appearance, steel for their construction has not been placed. This includes about 20,000 tons of steel, much of which is plates, for cars placed by the Louisville & Nashville with the American Car & Foundry Co. These will be built at the Madison shops, which will bring the steel to western mills. The Sante Fe has not yet placed its inquiry for 1000 composite gondolas, which will require about 10,000 tons of finished steel. The Union Pacific has ordered 14 dining cars from the Pullman Co. and the 228 tons of steel required for them has been placed with the Illinois Steel Co. Specifications by railroads against rails and track fastenings are heavy and in this department mills are turning out heavy tonnages.

Car Inquiries Decline

New York, March 1.—Car inquiry for the month just closing shows a decline, there being 2650 cars involved as compared with a total of 3100 in January. The largest inquiry in February comprised 1000 cars from the Santa Fe railroad. The only order reported was one for 157 cars for the Tennessee Coal, Iron & Railroad Co.

Locomotive inquiries and delivery were insignificant in size and number.

Inquiry Rate Decreasing

Pittsburgh, March 1.—Requests for light rails are decreasing in number and volume. One of the leading independent companies reports the receipt of a few inquiries but states the aggregate tonnage is not sizable. This is said to be due to further curtailment in the coal mining districts. On what little business there is going, varied prices are offered on 35 to 45-pound sections, from 2.25c to 2.50c and a price as low as 2.15c has been made by rerollers of light rails. Ordering is at an extremely low rate, however, although at times small tonnages are sold to industrial companies, making minor track installations. Relaying rails are being sold as low as $43, base Pittsburgh, which is nearer the price of new rails that has been the case in some time.

While spikes continue to be made for stock, not so many are being shipped as was the case some few weeks ago. The Western Maryland railway is in the market for 1200 kegs of standard spikes. Current demand continues fairly well divided between the standard and smaller sizes. The general price appears to be 3.65c, base Pittsburgh.

To Open Bids on Rails

Seattle, Feb. 26.—Bids will be opened March 14 by the Alaska Engineering commission for 6000 gross tons of 70-pounds basic open-hearth rails and fittings f.o.b. mill, or f.o.b. dock, Seward, Alaska.

Cautious Buying

Prevails in Wire Products—Nails Continue to Show Price Spread

Pittsburgh, March 1.—Considerable caution prevails in the present buying rate on wire and wire products. Inquiries are said to be more numerous than a week ago but they involve small

amounts of odd sizes and gages. Going to a 3.00c base on wire did not develop much business and those companies naming a 3.10c base on wire nails have not closed for sizable tonnage. Bright as well as galvanized wire for fencing purposes is asked for in 100-ton lots in some cases but these are not sufficiently numerous to cause increased operations among the wire mills. The American Steel & Wire Co. which is holding to the 3.25c base on both wire and nails reports a dearth of orders and its operating rate is exceedingly low.

Book Nails at 3.00c

Philadelphia, March 1.—Independent makers are booking nails generally at 3.10c and 3.15c, Pittsburgh, while in some cases apparently 3.00c has been done. Plain wire seems fairly strong at 3.00c.

Western Demand Irregular

Chicago, March 1.—While barbed and flat wire are in much less demand than usual at this season, to a degree that some independent makers have shaded prices as much as $5 per ton, demand for poultry netting is an unusual feature of the present market in that it is at practically normal volume for this time of the year. There has been some slight seasonable pick-up in the other lines, but it has been slow and has not yet reached far toward a normal volume. Shading by some makers on nails continues.

Sheet Bars More Active

Ohio Consumer Reported to Have Obtained 2000 Tons at $35, Mill —Other Semifinished Lines Dull

Pittsburgh, March 1.—Outside of a few small inquiries for forging billets for filling-in purposes, inquiries on all semifinished lines are exceedingly limited. The price generally quoted on forging billets is $48, although $45 has been reported and the latter level probably would prevail on tonnage business. Users of rerolling billets remain indifferent to the levels now obtainable, as low as $38.50. Some interest is evident in sheet bars and it is understood that 400 tons recently were bought by a Canton, O., user at $40, delivered. One 500-ton inquiry now is current on which that same price is requested. The general quotations here, however, are based on $42, quoted by several independent companies.

Practically no sales of skelp are being made on the 2.45c, 2.55c and 2.65c levels maintained by several companies on grooved, universal and sheared skelp, respectively. The companies naming the $2 per ton concession under those figures do not report any business. A few wire rods continue to move from time to time at $52, base, some holding to the $57 level in company with the American Steel & Wire Co., reporting no transac-

Eastern Market Untested

New York, March 1.—While open-hearth billets have been offered in the middlewest at $38.50, Pittsburgh, and forging billets at $45, these figures have not developed in the East. As a matter of fact, nothing lower than $40, Pittsburgh, on rerollers and $47.50 to $48 on forging billets has appeared in this district. Demand, however, for a long time has been lacking and there is nothing of a character to induce mills to quote prices designed to get business.

Eastern Market Not Tested

Philadelphia, March 1.—While some semifinished consumers are feeling out the market, they have not issued inquiries and hence the situation here is untested. A price of $40, Pittsburgh, on rerollers and $48 on forging billets are the lowest billet levels mentioned here, although $38.50 and $45 respectively have appeared in the Pittsburgh district. Prices that could be done here, however, undoubtedly would be as low, since makers in some case are inclined to make a serious attempt to get any business.

Sheet Bars Reach New Low

Youngstown, O., March 1.—With confirmation lacking, but from a reliable source, a report is current that an eastern Ohio sheetmaker has closed with a maker of semifinished material in an adjoining district for 2000 tons of open-hearth sheet bars at $35, mill. The market price of this product in this territory continues difficult to determine, inasmuch as no sales have been made for several weeks. The last sale, as far as known, was made at $43, Youngstown, but it is thought that $42. Youngstown, more nearly represents the market. The present inactivity of the sheet market has curbed the demand for sheet bars and unless makers of this product are assured that consumers are sincere in seeking quotations to place business and not merely to feel out the market, they do not consider it advantageous to set a price. However, quotations will be made on a moment's notice if the occasion arises. Demand for slabs and billets also is lacking, a month having passed without any tonnage having been sold to the domestic trade.

The Nonferrous Metals

	‡Copper	Spot Straits New York	†Lead New York basis	Zinc St. Louis basis	Spot† Aluminum	Spot antimony	Nickel shot
Feb. 23	12.75	32.00	4.12½	4.87½	24.50	5.25	40.00
Feb. 24	12.75	31.75	4.00	4.80	24.50	5.20	40.00
Feb. 25	12.50	31.00	3.87½	4.80	24.50	5.20	40.00
Feb. 28	12.50	30.25	3.90	4.75	24.50	5.20	40.00
March 1	12.50	29.87½	4.00	4.75	24.50	5.20	40.00

‡Outside market.
†Open market quotation

NEW YORK, March 1.—Nonferrous metal prices, all through the list, have been declining. Lead, influenced by the break in foreign lead quotations, dropped ½c further the past week to 3.75c, New York, at which price sales were made Feb. 26. This is the lowest for lead since 1915 and is nearly 1c a pound below the average price for 30 years. In 1896 lead got as low as 2.67½c. Today lead came back with the market 4.00c, New York.

Zinc was offered down to 4.75c, St. Louis, which is over 1c below the average price for 30 years, and a level touched only once or twice since 1908. Copper, tin, nickel, antimony and aluminum prices, all have been easier. Business has been dull, no improvement in consuming demand being apparent. The final stages of readjustment in the steel trade now are apparent, and have been marked by extreme dullness in the metal markets, for the nonferrous metals are used largely in conjunction with steel in the final manufacturing operations.

The copper market was featured by price cutting by two or three of the smaller producers who buy ore on an average price basis, instead of smelting their own ores, and therefore have less interest in a stable market than the larger agencies. They offered electrolytic down to 12.50c, delivered, the low price reached just before the copper financing operation. Large agencies have not shaded 13c for nearby, with premiums of ⅛c to ¼c for futures. Casting copper is 12.12½c, refinery; lake copper dropped to 13.00c, delivered.

The zinc market has been easy, prime western slipping steadily, until Feb. 28 this grade was offering at 4.75c, East St. Louis, and the same today. The low prices have not been attracting consumers' interest, as both sheet and brass mills are operating at a low rate and booking little new business.

The lead market has experienced a fair demand, but producers have put prices down rather than risk possibility of a renewed import. The American Smelting & Refining Co. on Feb. 24 cut its official price from 4.40c to 4.20c, New York, and on Feb. 25 from 4.20c to 4.00c, New York.

The tin market has been largely professional, several hundred tons being turned over the past few days in a dealers' market, but more lately consumers also have bought. The Federated Malay States government removed the pegged price. Spot Straits tin is down to 29.75c to 30.00c; February-March shipment, 30.75c.

The nickel price situation remained rather uncertain with the leading interest quoting officially 41.00c for shot and ingot, 44.00c for electrolytic, but with lower prices reported done in some cases on contracts. The nickel market now is a three-cornered affair, three sellers figuring in the market, so that nickel prices are less cut and dried now than previously.

Aluminum prices have been slightly easier in the outside market, with virgin 98 to 99 per cent obtainable at 24.00c for import and on contracts, and 24.00c to 25.00c quoted on the same grade for spot delivery from New York. No. 12 remelted is 19.50c to 21.00c.

Navy Announces Bids

Washington, March 1.—The Cambria Steel Co. is the lowest bidder on 350 tons of plates and approximately 200 tons of rivets and rods wanted by the navy department. The bid on the former lot is equal to 2.35c, base, Pittsburgh, and on the latter 2.25c, base, Pittsburgh. The Corrugated Bar Co., Buffalo, is lowest on 250 tons of deformed bars at figures which work back to 2.30c, base, Pittsburgh.

Cut Steel Prices

Is Request of Comptroller Williams to the Steel Corporation

Washington, March 1.—John Skelton Williams, who retires soon as comptroller of currency, last week made public a letter he had written E. H. Gary, chairman of the United States Steel Corp., in which he asked the Steel corporation to reduce its steel prices $25 a ton. In view of Mr. Williams' past record with respect to the steel industry, his letter is regarded as a parting shot in what has been a losing battle for the comptroller ever since he became director of purchases for the railroad administration in 1919. It brings to mind again the Hines-Peek controversy over the industrial board's steel prices, which with some exceptions, have been maintained continuously by the Steel corporation.

The letter to Judge Gary was based on the public statement of the latter relative to Mr. Williams' annual report to the secretary of the treasury. In that report Mr. Williams attacked the corporation's prices, declaring that in 1918 the corporation could have doubled wages or reduced prices of steel $25 per ton and at the same time could have paid dividends on its preferred and common shares. To this Judge Gary's comment was, if he could see Mr. Williams, he could show him the corporation's prices and costs had always been reasonable.

The letter from Mr. Williams says in part:

"On May 5, 1919, in view of my experience as director of purchases of the United States railroad administration, I prepared and submitted to the director general of railroads an analysis of the annual report of the United States Steel Corp. for 1918. The general conclusion, after recital of the figures, was that the profits of the corporation were 'swollen and unconscionable;' that the corporation could well afford to sell its products to the government and to all other consumers through the remainder of the year at net cost; that the corporation could in the year 1918 have doubled the wages and salaries of all its 268,710 employes and yet paid dividends on its preferred and common stock, with due provision for its sinking fund; or could have reduced its prices on all finished steel products $30 per ton and yet paid dividends on both preferred and common stock, after providing for interest, sinking fund and necessary deterioration.

"In my recently published annual report I asserted that one of the most important iron and steel companies in the country, meaning yours, showed that in the last year of the war, calendar year 1918, it could have doubled wages or could have reduced prices of steel $25 per ton and at the same time could have paid dividends on its preferred and common shares. You do not controvert or deny this.

"I realize your desire as an executive to do the best possible for your stockholders. I contend, however, that profits for them such as you gathered in during the war years were not 'reasonable,' and in the present condition of the country that your prices are excessive and unjustifiable. I ask you to consider, looking to the permanent welfare of the corporation and its stockholders, whether the public good will you would gain by such reduction of prices as the figures I have and the undisputed calculations and conclusions I get from them would justify, would not be an asset far outweighing the immediate loss in profits. I ask you, also, to consider whether the public and general hostility your corporation would incur by insisting on a policy of extortion while other interests and individuals are being exhorted to a policy of reduction, and by refusing to come to the help of the country and the world at their time of need, will not became a heavy and increasing liability.

"It seems to me, from the facts and figures that I have, that the huge and rich corporation over which you preside and for the policies of which you stand responsible now and will stand responsible in history before posterity, has a tremendous and unprecedented opportunity for doing good or harm to the commerce of the United States and the world and to the people of both."

Fail To Discuss Letter

Following a meeting of the directors of the American Iron and Steel institute in New York Feb. 25, Judge Gary declared he had not had time to read Mr. Williams' letter, stating that while he had received it he had been too busy to read it. The letter was not discussed at the meeting of the institute.

Judge Gary also said that at the meeting of the directors of the institute price reductions had been mentioned only casually and reiterated that the Steel corporation has no present intention of cutting prices or lowering wages.

Charles E. Duncan Dies

Sault Ste. Marie, Ont., March 1.—(By wire)—Charles E. Duncan, general superintendent of the Algoma Steel Corp., died Feb. 28, in the general hospital here after an illness of five days. He had undergone an operation for appendicitis, and his death was unexpected as he rallied following the operation. Mr. Duncan was 48 years old and an American citizen. He was born at Chattanooga, Tenn. He lived the greater part of his life in Johnstown, Pa., where he entered the steel business when still a boy. Later he was employed in the Homestead works of the Carnegie Steel Corp. At one time he was assistant general superintendent of the Bethlehem Steel Co. He entered the service of the Algoma Steel Corp. in 1909 and was general superintendent until 1915, when he went to the Donner Steel Co., Buffalo, and then to the Pacific Coast Steel Co., San Francisco, where he was in the service of the government. He returned to the Algoma Steel Corp., in April, 1920 as general superintendent.

Mr. Duncan was buried in Johnstown, Pa., March 1.

Sheet Mill Activity

Increased in Valley From 5 to 38 Per Cent in Week—Operations Gain

Youngstown, O., March 1.—Openhearth operations in the Mahoning valley this week are at the rate of 35 per cent of capacity as compared with 33 per cent last week. Twenty-three units are melting.

Sheet mill operations which reached 5 per cent last week now are at 38 per cent, 35 additional mills being under power. The present rate is the highest since Jan. 3 when 45 mills were active. Of the 40 mills rolling seven are at the plant of the Trumbull Steel Co., six at the Newton Falls, O., plant of the Newton Steel Co., six at the Niles, O., works of the Republic Iron & Steel Co., 12 distributed at two plants of the Brier Hill Steel Co., and nine at the East Youngstown plant of the Youngstown Sheet & Tube Co. The Newton Steel Co.'s mills were last operated 12 weeks ago, the Republic Iron & Steel Co.'s mills four weeks ago, and the Youngstown Sheet & Tube Co.'s mill five weeks ago.

In the Canton, O., district sheet mill activity has suffered a setback to the extent of 16 mills. The only mills in operation this week are four at the plant of the Superior Sheet Steel Co., those of the Stark Rolling Mill Co., and the Canton Sheet Steel Co. being idle.

Blast furnace operation in the Mahoning valley shows no change from last week. The rate of operation continues at 44 per cent, representing 12 stacks in blast, distributed as follows: The Carnegie Steel Co., five; the Youngstown Sheet & Tube Co., two; the Republic Iron & Steel Co., two; the Brier Hill Steel Co., the A. M. Byers Co. and the United Iron & Steel Co., one each. Eleven of the stacks in blast are producing basic and one merchant iron.

The Port Henry, N. Y., furnace of Witherbee, Sherman & Co. Inc., was shifted from foundry to copper free low phosphorus iron about the middle of February and will be changed back to foundry after a run of about a month on low phosphorus.

Crucible Steel Makers Protest

Manufacturers Tell House Proposed Tariff on Graphite Would Greatly Increase Costs—Crucible Makers Also Object, Declaring Effect of Duty Would Be To Favor Electric Furnace

WASHINGTON, March 1.—Placing of a tariff of 6 cents a pound on imports of flake crystalline graphite, crude concentrates and refined flake would increase the price of crucible steel $9 to $10 a ton and further endanger the crucible business, which already has been encroached upon by the electric furnace. The house ways and means committee, has been told by crucible steel producers, manufacturers of crucibles and foundry facings, and allied interests. Practically every user of graphite, or plumbago, in the United States has protested against any duty on imports of foreign graphite, especially from Ceylon, while Alabama graphite miners, representing 90 per cent of the domestic graphite mining industry, have declared protection imperative if they are not to be forced out of business.

"The tariff of 6 cents a pound, which has been proposed would mean an increased cost of from $9 to $10 a ton in terms of finished crucible steel, leaving out of consideration the lowering of the quality of the crucibles which would result from the use of domestic flake graphite," John A. Mathews, president of the Crucible Steel Co. of America, Pittsburgh, told the committee. "The placing of a tariff like this of nearly 75 per cent on the present market price would be a serious detriment not only to ourselves but also to all the other manufacturers of crucibles, and will tend to put some of the crucible manufacturers out of business and to destroy the industry of crucible melting both as concerns brass and steel. This material should be retained on the free list, or at most only protected in a small amount, such as 10 per cent, for revenue purposes."

The warning that the crucible industry may be placed in jeopardy has been sounded by James M. Westgate, treasurer and general manager of the Bay State Crucible Co., Taunton, Mass.

He said: "A tariff on graphite will not give any protection to the American miner of graphite because it is impossible to make a good crucible without the use of the Ceylon variety. The only result will be to advance the price on crucibles, and in connection with this we would call your attention to the fact that it was this factor during the war that brought out the electric furnace. Should the duty be imposed, this furnace will no doubt be able to override the crucible in the way of lessening the cost of production, which is bound to become excessive, as against what it would be if graphite is permitted to remain on the free list."

George E. Pettinos, Philadelphia, asked: "Why should a tariff be put on a raw material that is indispensable to our large industries of iron, steel, copper, brass and aluminum, when we have nothing in the United States to take its place?" He also pointed out that the increase in cost that will be put on iron, steel and other metals will far exceed the revenue obtained on graphite imports. Like other witnesses, he declared that there is a pronounced difference in the physical properties of Alabama and Ceylon graphite, with the comparison against the former, and that the use of the American product requires more clay binder in the making of crucibles, hence making for an inferior crucible.

A brief filed by Jonathan Bartlay, representing the manufacturers of graphite crucibles, New York, says:

Electric Furnace Installed

"The electric furnace is becoming a strong competitor of the crucible. During the war the high cost of graphite due to embargoes, excessive freight and insurance charges, made it necessary for the crucible maker to advance the price of crucibles proportionately, and it was the price of 16 cents per number that gave incentive to inventors to produce something to take the place of crucibles in order to lower the cost of production. Just how far the electric furnace will ever become a formidable competitor of the crucible cannot now be predicted, but we do know that several of the large melters have them installed, and I believe their future depends very largely on the price of crucibles."

Frank W. Griffin, Tungsten Mines Co., informed the ways and means committee that steel producers have no objection to the proposal providing for a difference between the rates on ferrotungsten and tungsten products and high speed steel or to a duty of 9/10 cent a pound on each per cent of tungsten contained, and 35 per cent ad valorem on high speed steel. Tungsten trioxide now is dutied at $9 a ton. The duties asked would increase the cost of steel in which tungsten is used only 3 to 7 cents a ton, he claimed. Foreign importations of tungsten have closed down the American mines. Mr. Griffin stated, and the latter are deteriorating very rapidly. The low grade mines which were equipped just prior to the armistice are the "backbone of future tungsten production," he concluded.

Tracks and shoe nails should have a tariff of at least 37½ cents ad valorem, the ways and means committee has been told by John B. Lightfoot, Shelton, Conn., speaking for the manufacturers of the products. The industry now includes 40 factories in Maryland, Ohio, Indiana, Illinois, Wisconsin, New York, Pennsylvania, Massachusetts, Connecticut and New Hampshire, Mr. Lightfoot said, doing an annual business of $10,000,000, and employing 4000 persons paid $40,000,000 a year with nails and tacks now on the free list. British makers can undersell Americans it is claimed, because compared with 1915, wages have increased 200 per cent steel tack plate 190 per cent and copper tack plate 90 per cent. A brief filed by the American Tack Manufacturers' association, in which appears the name of the Interstate Iron & Steel Co. Chicago, says:

"The recent outlook, as we see it, is that we shall lose a large part of our foreign trade as the competition of European manufacturers increases; and with the foreign manufacturers' low wage scale and lower raw material cost and the adverse condition of foreign exchange, we shall have to meet foreign competition in our domestic market at prices which will be ruinous to this industry unless some degree of protection is given in the tariff schedule."

German Competition Felt

Washington, Mar. 1.—Assistant Trade Commissioner Donald L. Breed, of Prague, reports to the bureau of foreign and domestic commerce that the Czecho-Slovak iron industry "is suffering from competition of German iron producers. Sweden is the chief source of the ore which Czecho-Slovakia imports, while Germany buys mostly from France. Deliveries can take place less than half the year, most of the shipments coming through the harbor of Leibau. A higher railway tariff in Czecho-Slovakia, as compared with that of Germany, tends to raise the cost of Czecho-Slovak production above that of the German factories, and the higher prices paid by Czecho-Slovakia for coal further contributes to the unequal cost of production. The German factories also have a greater supply of old iron at their command than the Czecho-Slovak factories, and many of the German factories have found it practicable to use as much as 80 per cent shot for iron."

Pig Iron Output Falls Sharply

February Total Reaches Lowest Figure since February, 1915 Excepting Strike Month—31 Furnaces Blown Out, Leaving Only 153 in Blast on Last Day of Month—Five Months' Loss Is 164 Stacks

OUTPUT of coke and anthracite pig iron with 1,927,088 tons continued to decline during February, registering the largest drop made during the slump of the past five months. Compared with the January output of 2,414,753 tons, February showed a loss of 487,665 tons. Disregarding the October 1919 production of 1,864,424 tons which was affected by the steel strike, the February tonnage was the lowest produced since February, 1915. The three-day shorter month of February compared with January was responsible for almost half the February decline. As evidence of still further curtailment in stack activities, 31 additional furnaces were blown out or banked. Thus on Feb. 28 only 153 furnaces were active compared with 184 of Jan. 31. Since Sept. 30 when 317 furnaces were operating, 164 stacks have been removed from blast.

MONTHLY PRODUCTION

	1921	1920	1919
January	2,414,753	3,012,373	3,306,279
February	1,927,088	2,984,257	2,943,347
March	.....	3,375,768	3,088,023
April	.....	2,752,670	2,474,374
May	.....	2,991,825	2,107,729
June	.....	3,046,623	2,114,028
Total 1st half	4,341,841	18,163,516	16,037,988
July	.....	3,043,918	2,424,212
August	.....	3,145,536	2,742,081
September	.....	3,124,308	2,480,790
October	.....	3,288,341	1,864,424
November	.....	2,935,081	2,407,369
December	.....	2,700,268	2,626,074
Total 2nd half	.....	18,237,452	14,544,950
Grand total.	4,341,841	36,400,968	30,578,730

In February merchant furnaces produced 322,220 tons, which compared with the 474,135 tons of January, showed a loss of 151,915 tons. On an average daily basis the February production was 11,507 tons, a loss of 3787 tons compared with the 15,294 tons of January. Nonmerchant or steelworks furnaces made 1,604,868 ton, which compared with the 1,940,618 tons of January, showed a loss of 335,750 tons. Reduced to a daily basis the February output represented 57,316 tons, a decrease of 5284 tons from the 62,600 tons of January. Merchant production showed a slightly larger relative loss than nonmerchant. The average daily production of all stacks during February was 68,824 tons, which compared with 77,895 tons of the previous month, showed a drop of 9071 tons. This decrease was only slightly less than the 9110-ton drop of the month before.

On Feb. 28, 153 urnaces were in operation, while on Jan. 31, 184 were operating, the net loss being 31 furnaces. The February figure is the lowest number of stacks operating since November, 1914, when 150 furnaces were active. Of the merchant class in February one stack was blown in and 13 blown out with a net loss of 12. Of the nonmerchant stacks six were blown in and 26 were blown out or banked with a net loss of 20. One new furnace, that of the St. Louis Coke & Chemical Co., at Granite City, Ill., was blown in for the first time. Compared with January when 48 merchant and 136 nonmerchant furnaces were active, in February 41 merchant and 112 nonmerchant were active, the loss being seven merchant and 24 nonmerchant furnaces. During the month the Steel corporation, which had 99 stacks active on the last day of January blew out 15 furnaces, thus only 84 were active on Feb. 28.

AVERAGE DAILY PRODUCTION

	1921	1920	1919	1918	1917
Jan.	77,895	97,172	106,654	77,523	101,930
Feb.	68,824	102,904	105,270	82,794	94,641
Mar.	.....	108,895	99,614	103,548	105,026
Apl.	.....	91,754	82,479	109,112	110,936
May	.....	96,510	67,991	111,351	110,119
June	.....	101,553	70,467	110,538	108,675
July	.....	98,190	78,200	109,954	107,659
Aug.	.....	101,468	88,453	108,983	104,483
Sept.	.....	104,143	82,692	113,774	104,691
Oct.	.....	106,075	60,142	112,335	106,332
Nov.	.....	97,836	80,244	111,595	106,620
Dec.	.....	87,105	84,711	110,602	93,077
Av.	73,590	99,456	83,910	105,290	104,502

DIVISIONS OF PRODUCTION

1920	Merchant	Non-merchant	Spiegel	Ferromanganese	Other ferro
Jan.	716,574	2,267,747	5,903	18,054	4,095
Feb.	735,707	2,215,079	11,755	18,015	3,701
Mar.	863,167	2,474,018	15,472	19,203	3,908
Apl.	761,331	1,958,535	6,600	18,036	8,168
May	808,751	2,140,346	10,744	21,536	10,448
June	769,236	2,233,565	8,510	26,870	8,442
July	791,440	2,209,128	6,925	28,347	8,078
Aug.	823,495	2,276,433	8,333	28,642	8,633
Sept.	798,111	2,277,607	11,849	27,697	9,044
Oct.	818,166	2,430,656	9,000	25,786	4,733
Nov.	705,014	2,190,217	11,006	23,298	5,546
Dec.	586,466	2,076,693	4,587	28,112	4,410
Tot'l	9,177,458	26,750,024	110,684	283,596	79,206
1921					
Jan.	474,135	1,940,618	2,542	20,960	4,950
Feb.	322,220	1,604,868	11,566	17,447	4,250

Ferromanganese totaled 17,447 tons, which was a loss of 3513 tons from the 20,960 tons of January. Spiegeleisen, however, with 11,566 tons showed a gain of 9024 tons over the 2542 tons of January.

FEBRUARY PIG IRON

States	No. of stacks	No. in blast last day of month February	January	—Total tonnage made— Merchant	Nonmerchant	—Totals— February	January
Pennsylvania	161	65	70	67,249	641,072	708,321	830,512
Ohio	79	27	40	64,483	361,167	425,650	633,333
Alabama	45	13	15	50,228	71,461	121,689	141,426
Virginia	19	3	3	10,549	.....	10,549	12,155
New York	28	10	12	33,038	65,907	98,945	141,662
New Jersey	5	1	1	3,858	.....	3,858	3,071
Illinois	26	14	16	41,104	195,634	236,738	266,915
Colorado	6	2	3				
Indiana	16	8	12	29,726	196,702	226,428	263,087
Maryland	6	1	1				
Wisconsin	6	2	2				
Kentucky	7	0	0				
West Virginia	5	2	4	2,710	20,744	23,454	46,745
Tennessee	16	1	2				
Washington	1	0	0				
Georgia	2	0	0				
Texas	1	0	0				
Minnesota	3	2	2	5,638	32,555	38,193	47,395
Michigan	3	1	1				
Missouri	1	1	0				
Spiegel and ferro—all states	..	..	..	13,637	19,626	33,263	28,452
Totals	436	153	184	322,220	1,604,868	1,927,088	2,414,753

Open Shop Advocate Dies

W. H. Van Dervoort, former president of the National Metal Trades association and a strong exponent of the open shop principle, died Friday, Feb. 25 at his home in Moline, Ill., after an illness of more than a year's duration. Mr. Van Dervoort served during the war as a member of the war labor board, and in this capacity he exerted every ounce of his strength and a tremendous amount of mental and nervous energy to help stem the tide which threatened to throw the control of industry into a chaotic condition. His efforts were successful although only his closest associates realize the responsibilities assumed by him during the critical period of the war labor board's existence.

Belgians Forcing British Cuts

Rails Reduced to Meet Competition, While Billets May Undergo Revision—Independent Bar Iron Makers Lower Quotations—English Interests Seek To Lower Wages —Great Decline Shown in German Exports of Iron and Steel

The Iron Trade Review Staff Cable

European Headquarters,
THE IRON TRADE REVIEW,
2-4 Caxton House, Westminster, S. W.

Sterling—$3.89

LONDON, Feb. 28.—A slight increase is noted in the volume of small orders, especially for tool steel, but the general situation in the British iron and steel market remains unchanged. Fifty-six blast furnaces are operating in the Cleveland district, a reduction of 16 from the number active a month ago.

Several reductions are noted in current prices of finished steel. The Steel association has been urged to reduce prices below its standard of £14 10s ($54.84) for billets, to compete with Belgian mills which offer billets delivered to British consumers at £9 ($35.11). A heavy reduction in the price of British rails has been forced by the successful Belgian competition.

Independent ironmasters of Staffordshire are selling bars at £23 ($89.47) a ton as compared with the bar iron manufacturers association's quotation of £26 10s ($101.52). Nearly all British iron mills are closed. The Midland wages board has been asked to withdraw all special wage advances that the plants may operate profitably. Steelworkers and manufacturers have held a conference in London with a view to an amicable understanding for wage reductions. The sheet and tin plate market is stagnant.

Present low freight rates are making shipping unprofitable and hundreds of ships have been laid up. Numerous shipbuilding orders have been canceled.

The first German postwar statistics show that the German iron and steel exports for the first half of 1920 amounted to 735,000 tons compared with 3,352,000 tons in the same period of 1913. Proposed German price reductions have been refused, in view of high production costs and the 60 per cent increase in freight rates.

British Iron Trade Reverts to Fixed Price Basis

European Staff Correspondence

Office of THE IRON TRADE REVIEW,
Prince's Chambers, Corporation St.,

Sterling—$3.89

BIRMINGHAM, Eng., Feb. 24.—Price reductions are not a striking feature at present after drastic cuts made in so many descriptions recently; but a few more products have been marked down. The Middlesborough ironmasters have decided to reduce No. 1 Cleveland and silicious iron 5 shillings ($0.97) per ton. Another important step is the abolition of the rise and fall clause which enabled either party to the contract to benefit by changes during the execution of the order, and the trade, therefore, reverts to the old practice of selling on a fixed basis. The movable clause has not proved of any particular value, and the change gives general satisfaction. There is some sign that in the North of England the recent substantial reductions will bring a little new business. However, no fewer than 13 furnaces have been blown out on the Northeast coast, of which 12 are on Teeside.

Two furnaces at Aclam Ironworks have been brought into operation, in addition to two at the North Eastern Steelworks. This brings the total number in operation on the Northeastern coast to 61.

Teeside is feeling foreign competition more keenly and several shipments of pig iron from Belgium and France have been received this week with fairly regular shipments of Belgian billets. Considerable quantities of steel and ironstone have arrived there from Holland and Sweden. It is estimated that the spread between Belgian pig iron and that of Cleveland is somewhere about £2 10s ($9.72) per ton. One lot of steel ingots received from Antwerp amounted to 600 tons. The trade in that district derives a little benefit from the greater cheapness of foreign ore, which now is received on the Tees on the basis of a 10 shillings ($1.94) freight from Balbao, enabling ore to be quoted on the Tees at £2 1s ($7.97) per ton.

New business in pig iron outside Cleveland is almost nonexistent. A neat deal of pig iron has been accumulated in Scotland, where furnaces are likely to be closed down shortly. In Barrow four furnaces have been put in operation to complete an order, and the situation there is slightly brighter. But the furnaces serving Birmingham, namely, in Northamptonshire, Derbyshire, and Staffordshire are getting hardly any business, and in the last named county, very few furnaces still are in operation. For the small lots being sold, Derbyshire, and Staffordshire forge and foundry irons now are in agreement as to price, forge being £11 (42.79) and foundry £11 10s ($44.73) for No. 3. In addition to the furnaces already blown out, two others are to stop if the situation does not improve.

Increasing unemployment is shown by the figures issued by the government for the northern division of the employment department of the ministry of labor, which comprises the counties of Northumberland, Durham, Westmorland and the Cleveland district of Yorkshire. At the beginning of February there were 40,476 on the unemployment registers, which includes 5460 women. This is an increase in a month of 10,015 men and 1953 women. Great numbers of men still are being paid off.

The position in the Staffordshire iron trade has become interesting from several points of view. The reduction in best iron of £2 ($7.78) per ton has already been noted. It now has been found necessary to drop the price of skelp to £27 10s ($106.97), so that there now is only £1 ($3.89) difference between this material and the common iron. But there is underselling under both heads, and this is likely to increase. Most of the mills are idle, orders being rigidly withheld even by warehousemen, whose stocks call for renewal. But the warehouses are anxious to get rid of all the iron they can, bought at high prices, and they are

Current Iron and Steel Prices of Europe

British Market

Corrected to Date by Cable

Home Market Prices. Gross Tons at Works or Furnace

	£	s	d	$
SEMIFINISHED STEEL				
Billets, soft steel	13	10	0	52.38
Sheet bars	13	10	0	52.38
Wire rods	16	15	0	64.99
FINISHED STEEL				
Steel bars, England, ¾ to 3-inch	16	10	0	64.02
Ship plates, England	21	0	0	81.48
Ship plates, Scotland	21	0	0	81.48
Beams, England	19	0	0	73.72
Beams, Scotland	21	0	0	81.48
Sheets, black, 24 gage	23	0	0	89.24
Sheets, galvanized, 24 gage	24	10	0	95.06
Rails, 60-lbs. and over	18	0	0	69.84
Tin plate, base box, 108 lbs	1	8	0	5.43
Steel hoops	20	0	0	77.60
PIG IRON*				
West Coast Hematite	11	0	0	42.68
Hematite, East Coast Mixed Numbers	11	0	0	42.68
Middlesborough, Basic	9	0	0	34.92
Middlesborough, No. 3	9	15	0	37.83
No. 3 Foundry, Derby, Leicester, Nottingham	10	0	0	38.80
No. 3 Foundry, Northamptonshire	10	0	0	38.80
No. 3 Foundry, Staffordshire	10	17	6	42.20
No. 3 Scotch Foundry	11	0	0	42.68
Ferromanganese 78 per cent	25	0	0	97.00
COKE				
Yorkshire furnace	2	15	0	10.67
Yorkshire foundry	3	7	6	13.10

French Market

Prices Last Reported

	Francs per metric ton (2205 lbs.)	$
PIG IRON		
Hematite, Lorraine	625	37.50
Foundry, Longwy, No. 2, sand-cast	347	20.82
Foundry, Longwy, No. 2, chill-cast	380	22.80
Foundry, Longwy, No. 3, sand-cast	350	21.00
Foundry, Longwy, No. 3, chill-cast	370	22.20
COKE		
French furnace	135	8.10
German, Belgian and British furnace	135	8.10
Same grades for foundry use	175	10.50
SEMIFINISHED STEEL		
Blooms	745	44.70
Billets	745	44.70
Sheet bars	745	44.70
FINISHED STEEL		
Merchant bars	90	5.40
Angles	90	5.40
Normal beams and profiles	90	5.40
Plates, bridge and tank, 5 millimeters and thicker	115	6.90
Sheets, black, 3 millimeters	119	7.14
Bars, cold-drawn, 40 to 60 millimeters round	115	6.90

Pig iron prices, are f.o.b. cars at Longwy, Briey or Thionville, according to the schedule of the Comptoir des Fontes; semifinished steel prices, by the Comptoir Siderurgique de France, are delivered at principal consuming centers; finished prices, by the Paris Consortium, are delivered at Paris.

Belgian Market

Prices Last Reported

	Francs per metric ton (2205 lbs.)	$
PIG IRON		
Foundry, No. 3, Belgium	77.50 to 77.50	38.50 to 39.90
Foundry, No. 3, Belgium	370	25.90
Foundry, No. 3, Luxemburg	400	28.00
Basic, open-hearth, Belgium	340	23.80
Basic-bessemer, Belgium	340 to 345	23.80 to 24.15
Basic-bessemer, Luxemburg	...	.....
SEMIFINISHED STEEL		
Blooms	500	35.00
Billets	550 to 525	35.00
Sheet bars	550 to 570	38.50 to 39.90
Wire rods	675	47.25
*Standard rails	650	45.50
FINISHED MATERIAL		
Merchant bars	60	4.20
Normal beams and profiles	60 to 65	4.20 to 4.55
Plates, 5 millimeters and thicker	75 to 77.50	5.25 to 5.43
Plates, 3 to 5 millimeters	77.50 to 80.00	5.43 to 5.60
Sheets, black, 1 millimeter	92.50 to 95	6.48 to 6.65
Plain wire	...	.....
Sheets, galv., 3 millimeters	200 to 205	14.00 to 14.35

*Sold on same basis as semifinished material.

All prices f.o.b. furnace or works, except finished material, for which delivered prices are quoted.

helping each other by mutual supplies from any stock they can spare at ironmasters' prices. This enables them to keep back their orders.

It is evident that the attempt to secure united action has broken down. A strong appeal was made at the last meeting of the bar trade for a general maintenance of prices, and it was suggested that a date should be named during which the latest reductions should be operative. There is, in fact, some fear of a sweeping downward movement, which may develop into panic. Already, however, some firms have intimated to the officials of the Bar association that they propose to quote independent prices, and this is confirmed by merchants, who are able to buy at £25 ($97.25) per ton, as against the standard figure of £26 10s ($103.08). The downward movement is partly due to a certain amout of underselling by Lancashire. But apart from this, those works better laid out for economical production consider they should have the advantage in competition, of their expenditure and enterprise in improvement.

Offers of Belgian iron still are rather numerous. Nut and bolt iron is coming in at £14 10s ($56.40) delivered, or considerably below the British price. The local ironmasters have done their best to discredit this material, and it appears occasionally hard and brittle stuff is being received, due to the steely character of the iron. But even with this disadvantage, the buyers save a considerable amount by their foreign purchases.

A remarkable statement was made at the dinner of the Staffordshire Iron and Steel institute recently by Managing Director Peacock, of Guest, Keen & Nettlefolds, who are large manufacturers of bolts and nuts. He warned the ironmakers that they must not depend on failures of foreign material. It was quite true that the bars he had bought were not really iron, but a grade of steel. Nevertheless the metal worked satisfactorily, passing severe tests and satisfying the analysists. In practice it involved no more waste than the Staffordshire iron in use. Mr. Peacock urged the manufacturers to combine and specialize on the production of a suitable material sufficiently cheap to meet this kind of competition.

Some competition has developed in skelp, which no doubt accounts for the reduction. This material can be bought from Belgium at £14 ($54.46) to £15 ($58.35) per ton, but the material is steel. Some heavy purchases were made also of steel skelp produced by re-rolling firms near Birmingham and sold at about £18 ($70.02) per ton. While most tube makers prefer iron, the disparity in price reconciles them to the use of steel, since it improves their competitive ability in the open market.

The recent wage discussion under the Midland Iron and Steel Wages board awarded the puddlers the first reduction since the outbreak of war. At that time the puddling rate was 9/6d ($1.84) per ton, and at the end of the last year it reached £2 9s 3d ($9.67), which indicates the very high wages these men have been earning. A drop of perhaps 25 per cent, is anticipated in the future. Some makers are already negotiating their selling prices on the basis of this wage reduction.

In the steel market, the most important event is a reduction by the South Wales Siemens Steel association of £3 ($11.67) per ton in billets to £14 10s 0d ($56.40). The figure is likely to become general, although for the present the North Eastern steelmakers are

still quoting £17 ($66.13) as their standard price. But even the Welsh reduction is inadequate, some Belgian billets being offered at about £10 ($38.90) per ton. The steel trade continues depressed, with an increasing number of steel works idle, and it is reported 10,000 tons of continental bars, blooms, slabs and other finished material were delivered last week into Scotland. No material reduction to meet foreign competition can be made until fuel is cheaper. The chief subject of inquiry now is as to whether the lifting of government control of fuel, which comes about at the end of the month, will carry lower prices for coke. The easing of prices should be assisted by the decided falling off in demand. There are said to be several hundreds of collieries idle.

Galvanized sheet trade continues depressed, with selling prices as low as £25 ($97.25) per ton. Hardly any orders are forthcoming, and most of the mills are either idle or on short time. Black sheets sales also present a dull market. In the tin plate trade inquiries are stronger, but no buiness can be done on the present price of £116s ($7.02) per base box. Merchants have little difficulty in underselling this by 5 shillings ($0.97) per ton for the small business passed through. Most of the mills continue idle.

Hadfield Tells of World Steel Requirements

Staff Correspondence

London, Feb. 22.—Sir Robert Hadfield was the principal speaker at the annual meeting of the London Iron and Steel Exchange which was held recently. He pointed out that in spite of prevailing conditions the world's production of steel is still considerably below normal requirements. Alluding to the subject of foreign competition and in particular the talk about an alleged combination between the United States and France to eliminate British steel from the world's trade, Sir Robert said:

"I found the statements were more or less moonshine. I do not mean there should not be any competition between nations; that would be absurd. This country does not fear fair and reasonable competition, and I for one do not ask for coddling of any kind which would take away that incentive to just and honest work with which the name of Great Britain has always been proudly associated. As regards the so-called arrangement between the United States and France, I find that Judge Gary, the head of the United States Steel Corp., entirely disassociated himself and his organization from any such attempts. Judge Gary considers—and I am heartily with him—that if people generally will try to better conditions we will soon return to a more satisfactory basis."

Sir Robert also said he is informed that the United States today is in need of 12,000,000 tons of rails for normal new construction, and to replace tracks which should have been renewed during the war.

Price Uncertain as Comptoir Dissolves

European Staff Correspondence

PARIS, Feb. 24.—Iron and steel prices quoted this week in the accompanying table presumably are those officially fixed by the largest French sellers, but sales are made constantly at 5 francs ($0.30) or more below the quotations.

The dissolution of Comptoir of Longwy has been accomplished, and opinions vary as to whether or not the event is fortunate, or the contrary. The majority of opinions deplore the disappearance of the comptoir and of the stabilizing influence it had on pig iron prices. Its position had become impossible for some time. In January

Franc—$0.06

plants not members of the comptoir were offering 2 per cent silicon, chill-cast-iron, at 10 francs, ($0.60) 20 francs ($1.20) or more under the prices given by the comptoir, and this together with very easy conditions of payment.

Although the comptoir only stopped functioning Feb. 1, competition already has forced prices down. Buyers believing prices may go still lower are supplying only their immediate needs so that it is not likely that the accumulated stocks which are weighing so heavily on the market will be liquidated for some time.

The market for cold-drawn bars is very unstable and prices vary considerably with different producers of this class of material.

It is becoming more difficult to give reliable quotations on any product. This is not only because of the disappearance of such regulating agencies as the Comptoir of Longwy, but also because the prices gathered from a study of various transactions cannot be considered as normal as sellers are obliged to consider their financial needs rather than their cost of production.

Belgian Pig Iron Under Ban in England

European Special Correspondence

BRUSSELS, Feb. 24.—Fluctuation in the rate of exchange has made it less easy for Belgium to book orders in England, but it is noted that Belgian billets, strip steel and merchant bars still are in demand across the channel. It is to these products that Belgium looks to sustain its large plants. However, it is to be noted that the chief effort is centered on export sales of the highly finished products of rolling mills and machine shops.

The latter should be borne in mind in viewing the situation which is about

Franc—$0.07

to develop with regard top rice reductions of French pig iron. For the moment, less is heard of German competition in Belgium.

Belgian pig iron having received much criticism in England as to its quality apparently is under a ban. This will not seriously affect Belgian blast furnaces at present. Stocks will be reduced in view of the fact that interest charges are high on accumulations. Belgian melters are not yet able to use all domestic offerings of iron.

The castings market continues weak but price drops are less marked, because they have already gone under production costs. Despite this fact, demand still is unimportant.

British Trade Statistics Given for January

Birmingham, Eng., Feb. 24.—Great Britain's production of pig iron in

January amounted to 637,700 tons, of which 199,200 tons were hematite, 178,900 tons basic, 162,800 tons foundry and 64,900 tons forge. The production of steel ingots and castings amounted to 493,400 tons, a fall of 34 per cent compared with December, 1920. The following tables give the production of pig iron and steel for each month from January, 1919:

	Pig iron		
	1919	1920	1921
January	661,000	665,000	637,700
February	626,000	645,000	.....
March	691,000	699,000	.....
April	647,000	671,000	.....
May	671,000	739,000	.....
June	658,000	726,000	.....
July	641,000	750,600	.....
August	521,000	752,400	.....
September	581,000	741,000	.....
October	445,000	533,200	.....
November	624,000	403,200	.....
December	632,000	682,500	.....
Total	7,398,000	8,007,900	637,700

	Steel ingots and castings		
	1919	1920	1921
January	718,000	754,000	493,400
February	734,000	798,000	.....
March	758,000	840,000	.....
April	668,000	794,000	.....
May	755,000	846,000	.....
June	631,000	845,000	.....
July	618,000	789,900	.....
August	474,000	709,200	.....
September	718,000	884,700	.....
October	433,000	544,300	.....
November	695,000	505,100	.....
December	692,000	746,600	.....
Total	7,894,000	9,056,800	493,400

The board of trade returns for January show that the value of the month's imports was £117,050,783, which is £66,292,205, or 36.15 per cent less than the total for the same period last year. Exports of British products for the month totalled £92,756,094, a decrease of £13,123,815, or 12.39 per cent. Exports of foreign and colonial merchandise for January were returned at £9,955,119, a decrease of £15,509,358. Compared with December last the decrease in imports is £25,734,462, and in exports of British products only £3,874,429.

Comparison of Exports and Imports

The following table, from which exports of foreign and colonial merchandise are omitted, gives a comparison of the figures for January, with the same period last year and in 1913:

	Imports	Exports
1921	£117,050,783	£ 92,756,094
1920	183,342,988	105,879,909
1913	71,242,271	45,446,431

The quantity of iron and steel and manufactures thereof exported last month was 232,380 tons, compared with 257,158 tons in January, 1920, while the value was £10,691,569, against £8,181,080. The quantity of coal exported last month was 1,700,106 tons, against 3,358,572 tons in January, 1920, and 6,070,318 tons in January, 1913.

The exports of the iron and steel products in January were as follows:

	1920	1921
Pig iron	51,356	20,086
Wrought iron bars, angles, etc.	4,279	4,995
Steel bars, etc.	25,419	17,362
Hoops and strips	5,670	3,640
Plates (not under ⅛-inch)	13,678	26,318
Plates and black sheets	11,597	5,625
Black plates	5,147	1,426
Galvanized sheets	35,162	19,774
Tinned plates and sheets	31,591	33,822
Wire	4,720	5,021

Australian Plants Are Closing Down

Special Correspondence

Newcastle, N. S. W. Australia, Feb. 24.—Owing to the shipping strike, iron ore is not obtainable and one of the blast furnaces of the Newcastle Steel Works has closed down. Also, the Slag Cement Co. has closed down its plant.

The Newcastle Steel Works' output for four weeks ending Jan. 5 was as follows: Coke ovens, 15,200 tons of coke, 142,200 gallons of tar and 227 tons of ammonia sulphate; blast furnace No. 1, 3500 tons of foundry iron, No. 2, 9620 tons of basic and foundry iron; open-hearth department, 14,000 tons of steel; blooming mill, 13,700 tons of billets and blooms; merchant mill, 18-inch, 7000 tons, 12-inch, 1300 tons, 8-inch, 727 tons; rod mill, 3400 tons of rods.

A consignment of 600 machines for making small arms and machine guns has arrived at Lithgow, N. S. W. The machinery was purchased in England a year or two ago.

The electrolytic zinc works in Tasmania has closed down owing to the rise in cost of labor and equipment and the fall in prices of zinc and spelter. Construction work is proceeding, however, to create increased productive capacity.

The fall in the price of copper has made it impossible for the Moonta Copper Co. to operate. As labor conditions have not adjusted themselves, the copper mines have no alternative but to suspend operations.

The Cobar Copper Works, Cobar, N. S. W., has nearly completed dismantling its plant. Thousands of tons of coke have been resold and most of the large machinery has been shipped to other states. The closing of these large works has been a great loss to Australian industry.

Commissaries are to be established in Anniston, Ala., for the joint service of the various manufacturing plants, about $150,000 having been appropriated by the companies. The commissaries will be located in the industrial section and general merchandise will be sold at cost.

Canada Parallels

Domestic Steel Market Situation—Imports Large—Immigration Normal

Toronto, Ont., Feb. 28.—Financial and industrial interdependence between the United States and Canada was emphasized by George G. Spence, general sales manager, the Steel Co. of Canada, Hamilton, Ont., before members of the Retail Hardware association at their recent convention. According to Mr. Spence when business conditions in the United States are favorable or adverse the industrial barometer of Canada is a direct gage. If the change is noticeable all Canadian products will be affected rather than one particular commodity.

"In considering present prices on steel products, as compared with prewar prices, it may be stated the existing values as related to costs are low, if not lower, than during the prewar period," said Mr. Spence. Therefore, further declines in prices are not likely unless heavier reductions in labor costs are effected than now seems reasonable to expect, because labor reductions will be regulated largely by manufacturing costs. It is interesting at this point to consider the efforts now being made by independent steel companies in United States to secure business.

"Some independents admit they cannot make and sell bars at $2.35, Pittsburgh, and make a profit, yet some are taking business at less. In the case of wire products, the prices are low. Wire nails have been selling at $3.25, base, notwithstanding makers state they cannot make money at that price. When you consider a keg costs 35 cents which leaves $2.90 for making the nails, drawing the wire, etc., compared with bars at $2.35, you can readily understand business, so far as manuturers is concerned, is down to a close bargain. Depression usually comes before and following, as it does in this case, a time of great activity. The resources of Canada are too great and institutions too sound to permit of anything like disaster. What we have to accept is the probability of profits during this year being smaller. A better condition of trade with a gradual improvement as 1921 goes on, will be seen.

"Perhaps there is nothing which has done more to hold up activity in the retail, hardware and manufacturing, as the building of new construction. Figures for 1920 show contracts awarded amounted to 35 per cent increase over 1919 for the whole of Canada and Ontario is about 25 per cent in excess of 1919, while the West shows an increase of 150 per cent. It has been said, however, that before good times prevail the retail prices must reflect the declines in wholesale prices and the retailer should take his loss in writing down his stock the same as the jobber or manufacturer and thus help a general buying movement.

Canadian foreign trade amounted to $2,351,174,000 in 1920, an increase over the volume recorded for 1919.

Coast Steel Market Is Backward

Secondhand Materials Forestall Demand For New—Resale Lots of Steel Bars Are Offered by Japanese—Belgians Cutting Prices—Ocean-Going Tonnage Available at Reduced Rates—Future Business Prospects Good

SEATTLE, Feb. 28.—Conditions in the iron and steel markets of this district are reported dull. Representatives of eastern mills find domestic consumers well stocked while the export demand is inactive. The trade on this coast has been oversupplied for months with secondhand materials from Puget Sound shipyards. Consequently little improvement in the local market is expected in the near future. The foreign demand depends largely upon the ability of other countries to finance their operations. Many local jobbers have absorbed losses and are cautious in placing new orders in view of unsettled conditions which are evident in this district.

Reports from Japan state jobbers are loaded with steel stocks. Unsuccessful efforts were made to consolidate these and sell them out. It is understood mild steel bars from Japan are being offered here, landed at 3.45c. This material originated in the United States and was shipped to Japan and now efforts are being made to resell in this country. Exporters are not expecting the Oriental buyers to be in the market for some time. Odd lots to replace certain sizes have been ordered from Japan but no volume of business has developed. Chinese exchange rates are working adversely to the United States.

Belgian manufacturers are evidently out to capture new trade if reports that they have invaded the Oriental market at prices below those of American exporters are an indication. The Belgians also are looking to the Pacific Northwest which is now considered a legitimate field due to the regular water service from North Europe to this section. Belgian steel bars are said to be offered in this market under 3.00c.

While the conference water rate on steel remains at $11.25 across the Pacific there are indications this level will not be maintained. Japanese tramp tonnage is seeking business and is willing to cut the rates of the regular lines. One vessel out of San Francisco is reported to have quoted $8 to the Far East. This is based on the supply of tonnage which exceeds the offerings of cargoes and the further fact that Japanese vessel owners are seeking business.

Dealers in scrap report business quiet. Mills are showing a disposition to buy direct from the railroads and ignore the broker.

Cast iron scrap is selling from $22.50 to $25, with rumors of sales being made under those figures. Stove iron remains in fairly good demand bringing from $15 to $18 but there is practically none in the market. There is no noticeable movement of railroad axles, prices ranging from $12.50 to $1 50 a gross ton. Cast iron car wheels are in the same position as railroad axles.

A local steel company claims business somewhat improved since the first of the year but with no considerable volume of orders on hand. Bar scrap has been offered at $9.50, the lowest on record, while scrap has not commanded more than $12 during the last month.

The outlook for tin plate is not bright. Owing to the poor demand for salmon during the last season much of the 1920 pack is still in storage and probably not more than 50 per cent of the cannery capacity in Alaska will operate during 1921. Consequently the supply and repair houses are expecting the coming season to be below normal as the cannery industry has heretofore always purchased heavily. Many of the packers have carried large stocks of tin from 1920 and the demand for this product is not expected to be more than half that of a normal pear. In the condensing industry business has been dull during the winter but recently there has been more activity and an increased demand for tin plate.

The prevailing warehouse prices in Seattle follow Steel bars, 4.50c; cold rolled shafting, resale, 6.75c; blue annealed sheets, 6.50c; galvanized sheets, 8.65c; black sheets, 7.30c; structural shapes, 4.50c to 4.60c; bands, 5.20c base; plates, 5.25c; reinforcing bars, 4.75c.

Price Cuts Guide Buyers at San Francisco

San Francisco, Feb. 28.—The local steel market reflects the reduced buying that has characterized the industry in the eastern centers during the past week. The uncertainty regarding future prices of steel products brought about by the breaking away of some of the independents from the previous price levels has caused consumers to be conservative, with the result that little new business has been secured.

Pig iron markets continue dull and little improvement is looked for inside of 30 days. Foundries report virtually no new business placed and plant operation is at a minimum. Some export inquiries are coming in, one involving several hundred tons, from Java. Reduced prices have not resulted in bringing out the buyers.

A dearth of demand continues to be noted in the plate market. Last week a 1200 ton Standard Oil contract was closed, the price has not been verified but it is known this went under 2.25c base Pittsburgh. The Union Oil Co. has announced it will shortly let contracts for three 12,500-ton and one 7500-ton tanker while the Oceanic Steamship Co., contemplates two ships.

Inquiry for sheets continues light in spite of the fact that many of the independent producers have sought business at a price considerably under that set by the industrial board.

Few structural tonnages were placed in the past week. Some small jobs, involving a few tons, have been awarded but large contracts are lacking. The McClintic-Marshall Co., recently was awarded 350 tons for a marine railway in Honolulu. Among some of the sizable projects pending is the San Luis Obisqo county's bridge at San Miguel, 170 tons and a bridge to be erected in Santa Cruz by the city which involves 225 tons.

The scrap market is at a standstill and, the past week's prices continued to ease off. A further drop of $1.50 a ton in heavy melting steel is reported, a few very small sales being made at $13.50 per gross ton delivered to the mill. Inactivity among the foundries, together with the fact considerable piles of scrap are on hand has made a quiet cast iron scrap market, quotations are nominal.

A general reduction on practically all out-of-stock-prices was put into effect this week by the local jobbers. Present prevailing prices are as follows: Steel bars 4.75c, Plates 5.40c, No 10 blue annealed sheets 6.50c, No. 28 black sheets 7.25c, No. 28 galvanized sheets 8.75c, bands 5.45c, shapes 4.85c, cold rolled shafting 6.75c.

Fail To Suspend New Ore Rates

Interstate Commerce Commission Refuses To Grant Michigan and Wisconsin Operators' Petition—Increased Tariffs Now in Effect—General Rate Structure Under Consideration—Revenue Freight Still Declining

WASHINGTON, March 1.—Wisconsin and Michigan iron ore interests will face an additional handicap when they go before the interstate commerce commission to push their request for an investigation of the upper lake ore rates, as a result of the refusal of the board of suspension of the commission to suspend the advances sought in January from Michigan and Wisconsin ranges to the docks. The increases became effective on Feb. 25 with the exception of two roads, where the effective date is March 14. The increase in the dock charge at the Michigan and Wisconsin ports is 5 cents a dock, and in the rate per ton from the ranges to the docks, 5 and 10 cents a ton. The minimum aggregate advance is 10 cents and the maximum 15 cents.

Late in December, Minnesota, Michigan and Wisconsin ore interests represented in the Lake Superior Iron Ore association, went before the commission to ask for a probe of the upper lake ore structure from June 25, 1918, to date, the goal being the fixing of a rate that nets the carriers 6 per cent on the reasonable value of the equipment utilized in the ore service. A few weeks after the complaint was fiiled, railroads serving the Wisconsin and Michigan ranges put in their plea for a rate increase. No advances were asked however, affecting iron ore shipments within Minnesota. Vigorous protest against the increases had been lodged by the ore interests in the states affected and also by such interests as the Steel & Tube Co. of America, McKinney Steel Co., Interstate Ore Co., and Jones & Laughlin Ore Co. It was pointed out that an increase in Wisconsin and Michigan without a corresponding one in Minnesota would upset the whole ore rate structure, and in addition, conditions did not warrant any advances at this time. Nevertheless, the suspension board permitted the rates to become effective. It is expected that a hearing will be held at Chicago, about the middle of May, on the original petition of the ore interests. The suspension board's action thus adds one more factor.

Answers to the complaint of the 80 Michigan, Wisconsin and Minnesota ore producers, asking the commerce commission to investigate rates on ore from the mines to the docks and fix such rates as will return the railroads 6 per cent on their investments, have been filed by the Chicago & North-Western, Lake Superior & Ishpeming; Munising, Marquette & Southeastern; Great Northern; Chicago, Milwaukee & St. Paul; Northern Pacific; Duluth, Missabe & Northern, and the Duluth & Iron Range railroads. The features of the answer are much the same, that the present rates on ore from the ranges to the docks are not unreasonable or discriminatory. The Duluth, Missabe & Northern denies that "reasonable rates for the service rendered should not exceed the cost of the service plus 6 per cent per annum on the reasonable value of the property investment required in the performance of said service, and denies that rates in excess thereof are tantamount to a rebate to the United States Steel Corp., or that the rates now in effect are unjustly discriminatory or unduly preferential to a particular shipper, to wit, the Steel corporation, or unjustly discriminatory or unduly preferential against the complainants."

The sources of revenue freight appear to be drying up, and each succeeding week sees the railroads of the country loading less and less freight. In the week ended Feb. 12, the latest for which the statistics of the car service division of the American Railway association are available, the carriers loaded only 681,627 carloads of freight. This was 5501 carloads fewer than in the preceding week and 105,006 fewer than in the corresponding week of 1920. Barring Christmas and New Year weeks, which are never considered comparable, this is the poorest week for freight loading since March 15, 1919. Still barring the holiday weeks, in only six weeks out of the 163 since Jan. 1, 1918, have the railroads done less business. In this period of a little more than three years, the lowest loading in any one week was 612,576 carloads and the greatest 1,011,420 carloads. The loading of 681,627 carloads of revenue freight in the week ended Feb. 12 compares with 696,997 carloads in the preceding week, and 786,633 carloads in the corresponding week of 1920.

Loading of coke in the week ended Feb. 12 fell to 9026, the lowest since coke loading began to be kept separate from coal last July. The loading of coke in the corresponding week of 1920 was 9977 cars. Loading of coal totaled 151,786 cars, against 188,371 cars in the same week of 1920. This marks the fifth consecutive week in which the loading of coal has slipped back. Loading of ore of all kind amounted to 8094 carloads, compared with 12,183 in the corresponding week of last year.

In a complaint filed before the commerce commission by the Pittsburgh Steel Co., Glassport, Pa., against the Pittsburgh & Lake Erie and Pennsylvania railroads, the freight on hoop steel from Glassport to Manor, Pa., is involved. While the freight was assessed at 12½ cents per 100 pounds the charge should have been only 7 cents the steel company contends. Freight on steel rails from Memphis, Tenn., to Sparta, Ill., is involved in an action brought by the Mid-Continent Equipment & Machinery Co., St. Louis, against the Mobile & Ohio railroad. The freight charged on 46 carloads of marine steam turbines from Schenectady, N. Y., and Trenton, N. J., to Seattle is upheld by an examiner for the commission in a tentative report on the complaint of the Northwest Steel Co., Seattle, against the Oregon-Washington Railroad & Navigation Co.

The car service division of the American Railway association has announced consolidation of the Atlantic, Boston and Philadelphia embargo zones into one zone with headquarters at Washington. No change is made in the other embargo districts centering on Chicago, Fort Worth, Tex., Montreal, Que., and Winnipeg, Man.

Attack Steel Rate

Sixteen Cleveland companies have joined in complaint to the interstate commerce commission that the through rate on articles of iron and steel manufacture from Pittsburgh to Cleveland exceeds the combination of rates between intermediary points, in violation of interstate commerce regulations. The difference is said to be equal to about 2 cents per 100 pounds, and the complainants ask for a restitution, amounting to about $100,000. The through rates is declared to have exceeded the combination rate since Sept. 20, 1917, though formal objections was not made until recent rate increases made the extra charge more pronounced. The present rate on finished steel per 100 pounds from Pittsburgh to Cleveland is 24 cents.

Make Injury Reports Compulsory

State's Responsibility for Educating Workers to Dangers of Infection of Slight Wounds Related to Administration of Compensation Laws—Loss Could Be Minimized by Plant Managers Insisting on Simple Rules

BY H. D. MARTIN

IS COMPENSATION insurance covering the entire cost of industrial accidents? Is the readjustment program anticipating the seeping away of human energy, and the great leak in the treasury of industry due to infection?

These are two great questions to which all manufacturing companies inevitably must give consideration. The railroads have set an example, and proved beyond doubt the advantages of the care of the human element. The question of compensation insurance as compared to the great economic loss incurred through accidents, can be summed up in no better manner than by first referring to the reason for the creation of the workmen's compensation act.

With the advent of modern industrialism an increase in the number of accidents was inevitable and damages could be recovered only by civil action. Many of the victims and dependents became objects of public charities. In some instances meritorious claims were lost through long and expensive litigation. Moreover, employers frequently were compelled to pay excessive amounts. The law did not undertake to specify the sum to which the claimant was entitled, as does the workingmen's compensation act.

Preceding the enactment of a workmen's compensation act in one of the states, a judge said: "The system which has been followed in this country of dealing with accidents in industrial pursuits is wholly unsound. There is an independent and widespread sentiment which calls for its modification and improvement. General welfare requires it. There has been an enormous waste under the present system. Actions for personal injuries of employes against employers no longer furnish a real and practical remedy, but annoy and harass both, and do not meet the economic and social problem which has resulted from our modern industrialism."

All but seven states in the United States have since adopted the workmen's compensation act. It has been found to be a decided advantage.

We have at the present time two types of insurance systems. One is that of state-managed insurance, and the other is that of private insurance companies operating under the workmen's compensation law. But the amount of premium paid to the state fund or to an insurance company is not sufficient to cover the entire cost of accidents.

The Illinois and Pennsylvania compensation bureaus reported the number and costs of accidents as follows:

ILLINOIS

1917 and 1918

	Number	Cost
Fatal	1,656	$ 4,076,654
Nonfatal	111,640	11,317,946
Total		$15,494,600

PENNSYLVANIA

1916 to August, 1920

	Number	Cost
Nonfatal	923,361	$15,844,794
Fatal	13,477	25,656,821
Permanent disability		6,891,875
Compensation awarded		6,758,508
Total		$55,151,998

The foregoing do not include medical awards on noncompensable accidents, or medical payment on contract. If these and other costs incurred could be added to the amounts paid as awards, the figures would be more impressive, as the mere paying of premium and compensation is a minor consideration in comparison with the economic loss.

The burden of responsibility not only rests on industrial managers but on every individual. Are we not inconsistent when we believe that our only cost is the payment to the industrial commission or the premium to an insurance company?

The answer to our problem was thought to be legislation; but we have improved legislation and yet other needs exist. Adequate provision for the injured is essential, it is true, but greater yet is the need of proper administration and a comprehensive educational system that will lessen the number of accidents. The compensation laws are said to lack correlation between compensation administration and accident prevention. However, a comprehensive educational system would lessen the recurrence of accidents and go far toward reducing the cost of insurance.

Every employe should be educated to report every accident in order that proper precautions may be taken against infection. Accidents which workers sometimes consider trivial, may lead to serious consequences.

Among the interesting features found in the German workmen's compensation act, is one which could be well applied with profit to every industry. The law states:

"Stringent rules must be issued that as long as an open wound is not protected by at least a dressing, the injured person must cease work. Every injury occuring in the establishment is to be reported by the injured person as soon as possible to the proper officer. Every workman must exercise the greatest care that any wound, no matter how trifling it may seem, shall be immediately cleansed and carefully protected against the entering of dust or other foreign material."

In Massachusetts, the industrial accident board reported from July 1, 1918 to June 1, 1919, a total of 178,045 accidents of which 5178 wounds were infected, 19 proving fatal and 34 causing permanent partial disabilities. One in every 13 nonfatal cases became infected. The total amount paid for medical and compensation awards for the period was $5,219,760. It was estimated that 7 7/10 per cent of this expense or $401,921 was due to consequences of infection. Had the proper precaution been taken, the loss would have been much less.

Some of the states require the reporting of compensable accidents only and many companies do not make any pretense of insisting that the minor accidents be reported to them. This is a serious mistake as every injury, regardless of its character, should be reported.

A survey was made recently to determine the policy of some of the larger plants, relative to rules for reporting trivial injuries. One company wrote:

"It has been our policy to insist that all wounds or injuries, regardless of how trivial they might seem, be given attention by the trained nurse or doctor at the local emergency hospital. During 1918, there were removed some 10,000 or more foreign bodies from the eyes. Formerly two-thirds of the foreign bodies

The author, H. D. Martin, is medical director, Pollak Steel Co., Cincinnati.

were removed by fellow workmen or socalled "specialists," when the percentage of infection ran high, from 5 to 50 per cent. Today the proportion of infections is about 1 to 700. A great economic advantage is shown by the insistance of reporting all injuries, regardless of their character, as it seems that it generally takes from three to four times as long for an infected wound to heal as a noninfected one. Moreover, the complications from infections are very disagreeable and very often cause permanent disabilities as well as fatalities."

One of the questions submitted to several of the companies was: "Do you believe that every injury, regardless of its character, should have attention?" The reply invariably was: "Why discriminate against wounds because they are small?" A company wrote:

"Our statistics cover the work that we do, and there is no disposition to curtail surgical work for a year or any other period to ascertain precisely what damage would occur from neglect of such treatment. Many of the worst infections encountered were from minor abrasions, that removed merely the outer skin and on which the patient had deferred treatment until infection had developed."

Another company reported that through such a system the number of infections had been extremely small, much less than 1 per cent.

This demonstrates the advantage of reporting every injury, regardless of its character. It shows the need of anticipating the seeping of human energy due to infection. The reporting of minor accidents minimizes the cost of surgical attention, reduces the chance for permanent and partial disability and lessens the possibility of a fatality.

The value of educating the employe is corelated with the question of who is paying the cost of accidents. Even though we have legislation which provides for compensation, administration, etc., there is still an enormous waste, and the economic and social problem which has resulted from our modern industrialism has only been partially solved. It is now up to industrial managers to stop the balance of the waste by adopting a comprehensive educational system.

Cost Reporting Case To Be Heard in April

Washington, March 1.—Unless something unlooked-for at this time revives the apparently fast-waning interest of the federal trade commission in cost reporting, the next chapter in the court tangle that followed the attempt of the commission to compel the submission of production cost data by iron, steel and coke producers will be written the middle or the latter part of April. The injunction proceedings whereby 21 iron, steel and coke producers, in the action entitled the Claire Furnace Co., and others against the federal trade commission, now is on the trial docket of the District of Columbia supreme court, and should come up in 45 to 55 days. The hearing will determine whether the injunction will be dissolved or made permanent.

The temporary injunction which is still restraining the commission was granted immediately after the commission went into the district federal courts at Philadelphia and Trenton, N. J., and instituted mandamus proceedings against the Bethlethem Steel Co., and the Republic Iron & Steel Co., respectively. Although the commission at one time was considering asking modification of the injunction so that the Bethlehem and Republic cases could be pushed through to the Supreme Court for a final decision on the commission's authority, this was not carried out. The delay in the final hearing on the temporary injunction granted in the district court thus has worked to the advantage of the steel producers, and so far as they are concerned cost reporting has been dead for more than six months.

The appropriation of $150,000 by congress for obtaining production cost data on steel, coal and other commodities was not touched by the commission, it is understood, and has lapsed.

Congress Refusing to Shackle Industry

Washington, March 1.—As the present session of congress draws to a close it is noteworthy that all the many threats at the beginning of the session to enact legislation to extend government control over such industries as coal and the packing houses have been clouds without rain. The packer-control bill did pass in the senate, but went to an early grave in the house. The defeat of the so-called "control" interests was more marked in the case of the Calder coal-control bill, which has never emerged from committee, though its sponsors declare they will revive it next session.

With President-elect Harding on record as saying he desires "less government in business and more business in government," the greatest danger that the government's wartime suzerainty over business would be continued appears to be past. Congress has been warned that control of the coal industry would prompt an attempt to control the steel and other industries.

Emergency Tariff Is To Protect Industry

Washington, Mar. 1.—Every indication points to the immediate drafting of a second emergency tariff bill to afford interim protection to industry while the permanent tariff bill is being enacted, and it seems likely that this second emergency bill will be given the right-of-way by the house ways and means committee as a result of the conference of Chairman Fordney, of the committee, with President-elect Harding. This emergency measure, it is understood, will cover metals, minerals and manufactured products in general, and will base imports upon ad valorem rates at the port of entry in order to meet the problem of fluctuating exchange. The enactment of the so-called permanent tariff bill will require from nine to 10 months, it is agreed. The Fordney emergency tariff, passed by both the house and senate, affords protection to the farmer and livestock interests during this period. The second emergency tariff is being talked of as providing industry similar protection.

All prophecies to the contray, the senate has finally passed a restrictive immigration bill, the urge being provided mainly by the fear of typhus. As passed by the senate, the Dillingham bill limits the number of incoming aliens from any one country to 3 per cent of the aliens of that country in the United States at the time of the 1910 census. The bill is aimed to be effective April 1. In the year ending June 30, 1922, it would permit only 355,461 aliens to enter this country. In 1913, the last pre-war year, something like 1,050,000 aliens arrived. Only 10 more legislative days remain, but as the house has practically completed consideration of the appropriation measures. the Dillingham bill stands in a fair way of being approved. The senate has killed the Johnson bill, which originated in the house, prohibiting all immigration for a year, and the house seems in a mood to accept anything that will cut down the number of immigrants.

Gets State Land

The department of internal affairs at Harrisburg, Pa., recently sent the Perry Iron Co., Erie, Pa., a patent of 158 acres of state land, of which 127 are under the waters of Lake Erie, for possible future enlargement of the company's plant. The consideration is understood to have been $9486. The land was appraised by a committee in Erie and adjoins the State Soldiers and Sailors home.

Making Pressed Metal Parts Becomes Important Industry

Principle of Shaping Sheet and Bar Metal Between Dies in Power Presses Is Employed on Wide Range of Work—History of Industry Shows Rapid Development in Last Decade

BY E. L. SHANER

THE development of the manufacture of pressed metal in the United States extends from colonial days to the present time. In 1652 Joseph Jenks made the dies for the famous pine tree shillings shown here, which probably were the first products pressed to shape in dies in America. Today thousands of articles, including automobile parts such as the axle housing shown at the right, are made in large quantities, consuming large tonnages of sheets and bars and involving the employment of many thousands of workmen and the investment of considerable capital in plant and equipment. The products include thousands of articles ranging in size from paper fasteners to automobile side frames.

1652 —— 1921

IN THE brief space of about 20 years the manufacture of pressed metal parts has grown from a small beginning to an important division in the iron and steel industry. This rapid growth, particularly during the past 10 years, has been greatly stimulated by the popularity of the automobile and by the development of metal which can be pressed into shape easily and at a comparatively small cost.

Products Cover Wide Field

It is difficult to conceive of any civilized community in which numerous pressed metal products cannot be found. Hundreds of articles, ranging in size from the eyelets in shoes up to the corrugated steel ends of 50-ton freight cars, are performed on presses. During the past few years, the scope of this industry has been extended at a tremendous rate and it has been estimated by a reliable authority that more than 50,000 tons of sheets alone are consumed annually in the manufacture of pressed steel articles.

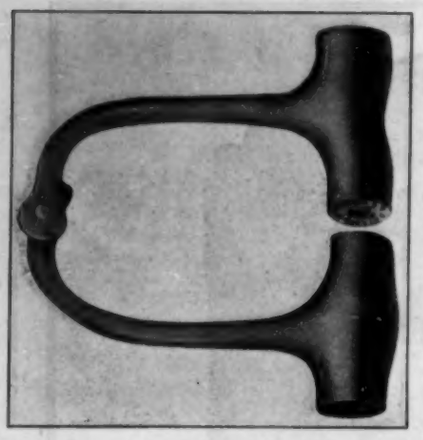
In view of the present importance of the pressed steel industry, as well as from the standpoint of what the future may bring forth, it is interesting to trace the development of metal pressing from its beginning. In order to go back to the earliest adaptation of the principle which is now used, it is necessary to consider the early efforts of the characters of biblical history. From the book of Exodus XXXIX, 3, are the words "And they did beat the gold into thin plates and cut it into threads." This undoubtedly refers to a practice in vogue about 1500 years before the Christian era and unquestionably is the method used in making wire. However, it is reasonable to suppose that not all of the gold which was beaten into thin plates was "cut into threads" and therefore, it is probable that some of these plates were pounded over round stones into the form of shells or cups. This theory is amplified by Oberlin Smith in his book of "Press Working of Metals," where he says:

"The first man who chanced to dig up a little nugget of gold or copper or some other man who found a piece of metal in his fire as a result of the accidental smelting of certain ore happening therein, may very probably have pounded it out thinner between two stones, and thus have become the first sheet metal manufacturer. If he then cut it in two by lapping it over the edge of the stone and sliding another down past it, he had invented the first shearing press. If he then pushed the end of a sharp edged cylindrical stone through it into a hole in a stone underneath, he was doing the first punching. If the upper tool was rounded off so as not to cut through, being perhaps a hard wood stick, he was making a little cup in the process of forming or stamping."

Utensils Shaped by Hand

It is doubtful whether any marked improvement in this method was made for many centuries. It is known that kitchen utensils and a few other articles were made in prehistoric times by rudely shaping malleable metals in the manner just indicated, and even as late as the fourteenth century, during the reign of Edward III, it is recorded, that the "pots, spits, and frying pans of the royal kitchen were classed among the king's jewels." This indicates that the making of these utensils still was a painstaking and laborious operation.

In 1550 an important step in the development of materials suitable for pressing and stamping was made when Bruilier, a Frenchman, is said to have rolled metal to uniform thickness for the purpose of making coins of equal weights. Tinplate was introduced in Bohemia in the sixteenth century and



ANCIENT COINING PRESS OF UNCERTAIN DATE

This consists of two dies and a pin connecting the two arms. The outer ends of the dies were placed between hammers which imparted sufficient power to stamp the coins.

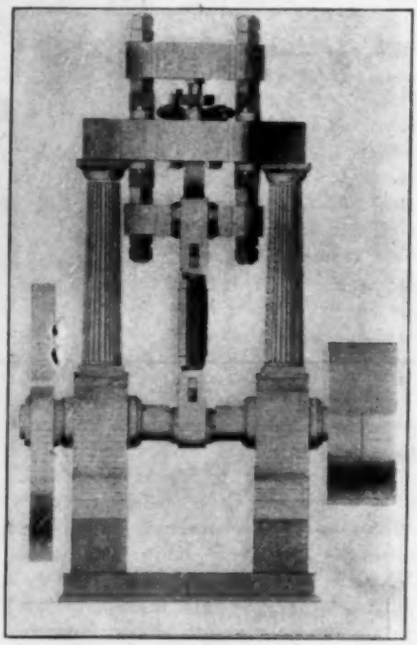
soon after was carried into Saxony, from where the industry spread westward. These improvements over the early process of beating metal into sheets opened the way for the first accurate methods of shaping thin metal, inasmuch as the property of uniform thickness permitted the use of dies. This led to the first example of pressed metal in America, which was furnished in 1652 when Joseph Jenks, the pioneer ironmaster of Lynn, Mass., was commissioned by John Hull to make dies for coining currency. The coins struck off from these dies were made in three sizes, three, six and 12 pence, the latter being the famous pine tree shillings. The word "Masathusets" surrounding a tree, all in relief, appeared on one side, while the word "New England" with the year and the denomination in pence appeared on the other side.

Stamping Clock Bells from Strips

Other forerunners of power pressed metal which appeared in the sixteenth century were articles shaped from strip steel in one operation by hand tools. Clock bells were made in this manner from alloy sheets which were suitable for cold stamping and gave a clear tone. The first improvement over the rude methods of stamping metal by hand came when screws or toggles were employed to apply force to the dies. Presses of these types were used in the mints of various countries at this period.

Undoubtedly the first practical power presses were made in Germany. A number of authorities credit Ludwig Keserstein in 1796 and Johann Michel Luber in 1802 with the development of the earliest successful machines. These were operated by water power and were equipped with a pinion driven by a worm mounted on the press spindle. This involved the principle employed in modern friction presses. Other inventions followed rapidly in the nineteenth century. Henry Maudslay, an Englishman, invented a self-acting punch with rack feed in 1813, and James Nasmyth, a Scotchman, invented shearing and stamping machines in 1843. Four years earlier, Leisha K. Root, Collinsville, Conn., made a machine for punching and forming the eye of an axe or hatchet, this being one of the first truly important applications of the power punch in America.

Probably the first commercial press work done in the United States was in about 1855. In that year Degross & Fowler, Wallingford, Conn.,



DRAWING OF COINING PRESS BUILT ABOUT 1863

In this press mechanical gears and connecting rods are used instead of the force of impact as in the case of the ancient press shown at the top of this page.

built a press for punching metal. Four years later Stephen P. Ruggles built a punching and stamping press at Boston. In 1860 Milo and Charles Peck developed an improved drop press at New Haven, Conn. An improved trip hammer was invented in the same year by Alexander Morton, New York.

Although power presses were known prior to the Civil war, as indicated in the preceding paragraph, the transition from primitive tools did not gain much headway until late in the sixties. Up until the first or second year of the war most of the kitchenware in the country was pieced together by riveting or soldering. The first commercial seamless ware was made under drop presses. An interesting account of the making of the first stamped dairy pan by an old established metalware manufacturer was given by O. P. Hatton, advertising manager, E. W. Bliss Co., in a paper read before the Brooklyn Engineers club, Nov. 18, 1920. The story, taken from a letter from the managing director of the metalware concern, is as follows:

"Mr Tripp was in charge of the factory. I have often heard him tell of the excitement that was created locally when the first stamped dairy pan was produced and the triumph it was considered.

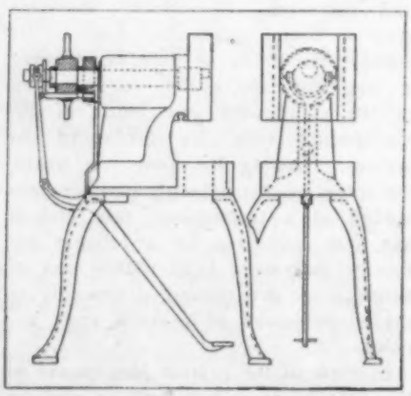
"There was no engine, the power being furnished by two men who stood behind the drop press and by means of a rope running over a pulley successively lifted the punch or "force" and let it fall upon the sheet of tin plate interposed over the die.

"This crude system proceeded by repeated dropping of the force and the substituting of new forces which extended further into the die than the previous one until the metal was finally coaxed into the shape of a milk pan.

"Afterward a horse was substitued for men to lift the force. Later a steam engine was installed, the buildings extended, new ones erected...and a line of stamped, pieced and japaned tinware of creditable proportions for those days was created."

Early Presses Made in Connecticut

Meriden, Conn., was the scene of many attempts to perfect machinery in the middle of the nineteenth century. The firm of Oliver Snow & Co., founded in 1839 by Oliver Snow, a skillful mechanic, continued in operation under various firm names for many years, including Snow, Hotchkiss & Co.; Meriden Machine Co.; Snow, Brooks & Co. and Parker, Snow, Brooks & Co. The plant became well known as the producer of fine machinery and engines including power presses and shears. At one time the



SKETCH OF FOWLER POWER PRESS

The presses manufactured by De Gross & Fowler were among the first produced on a commercial scale in this country. The first patents were taken out in about 1855.

famous Springfield rifles were manufactured at the rate of 100 per day and later coining presses were made in these shops. Eventually the firm of Parker, Snow, Brooks & Co., became Parker Bros. and it was in the plant operating under this name that two workmen who later became prominent figures in the pressed metal industry worked side by side at the same bench. These men were E. W. Bliss and N. C. Stiles, both clever mechanics and inventors. Mr. Bliss was working in the capacity of foreman and was making Fowler presses under contract. Mr. Stiles had invented and patented a punching press.

In 1857 Mr. Stiles started a small machine shop of his own at Meriden, Conn., operating under the name of N. C. Stiles & Co. Following a period of litigation with the Charles Parker Co., over patents on various presses, the interests of both parties were amalgamated in 1871 and the resulting firm was known as the Stiles & Parker Press Co. The office and factory were at Middletown, Conn. In the meantime Mr. Bliss had become superintendent of the Campbell Press Works at Brooklyn. At the end of the year he left this concern and entered upon a non-successful manufacturing venture at New Haven, Conn. In 1867 he returned to Brooklyn and began making presses and dies in partnership with John Mays under the firm name of Mays & Bliss. In 1871 Mr. Mays sold his share of the business to J. H. Williams, founder of the J. H. Williams & Co., founder of the drop forgings. Mr. Bliss purchased the Williams holdings about 10 years later and conducted the business until 1886 under his own name. During this year he formed a stock company, admitting 11 of his employes to a share in the profits. In 1890 the E. W. Bliss Co. was formed with a capital of $1,250,000 which was later increased to $2,000,000. The company absorbed the Stiles & Parker Press Co., at this time and moved the plant to Brooklyn, N. Y.

Oberlin Smith, who was closely identified with the early development of the pressed metal industry, established a machine shop on North Laurel street, Bridgeton, N. J., in 1863. Mr. Smith did a general jobbing and repair business and in 1864 with J. B. Webb as a partner, began the manufacture of foot presses for canning factories. This soon led to the making of presses and dies of many kinds. In 1873 Frederick F. Smith became identified with the business which was operated for about four years under the name of Oberlin Smith & Bro. On Jan. 1, 1877, the company was incorporated as the Ferracute Machine Co., Oberlin Smith serving as president and engineer. The company early extended its list of products to include presses and dies for shearing, cutting, punching, bending, forming, coining, drawing and broaching bar and sheet metals.

Industry Spread Westward

The influence of the early manufacturers of power presses upon the development of the pressed steel industry has been felt in all parts of the country. This is largely due to the fact that the workmen identified with the early manufacturers in Middletown, Meriden, New Haven and other New England towns, migrated to industrial centers in the Middle West where their ideas soon took form in power presses. Many of the firms now producing presses in Ohio, Michigan, Illinois and other inland states were founded by men who received their training from men like Fowler, Parker, Stiles and Bliss.

The early development of power presses was marked by several legal conflicts over patents. Fowler received a patent on an automatic stop for presses in 1854. N. C. Stiles patented an improved stop in 1857, as well as eccentric adjustment. The inclined stationary press with the sloping table designed to facilitate the handling of blanks was patented Jan. 28, 1868. One of the first double acting power presses was one designed for making shoe blacking boxes in Dec. 27, 1870. A patent was taken out by Bliss & Williams for a clutch on the same date.

The earliest presses naturally were adapted to pressing only thin metals. A study of the catalogs of the pioneer press manufacturers gives an indication of the work performed at that time. The following appears in one of the early catalogs put out by the Stiles & Parker Press Co:

"We are prepared to furnish the machinery, tools and dies required in making cans, canisters, pails, boxes and packages for

Baking powder	Lye	Salve
Blacking	Mustard	Sardines
Bluing	Milk	Soups
Biscuits	Meat	Spices
Butter	Oil	Syrups
Coffee	Oysters	Tea
Cocoa	Preserves	Tobacco
Cigarettes	Potash	Vegetables
Fruit	Powders	Varnish, etc.
Gun powder	Prints	
Lard	Pills	

This indicates that most of the pressing work of this period was performed on light gage tinplate.

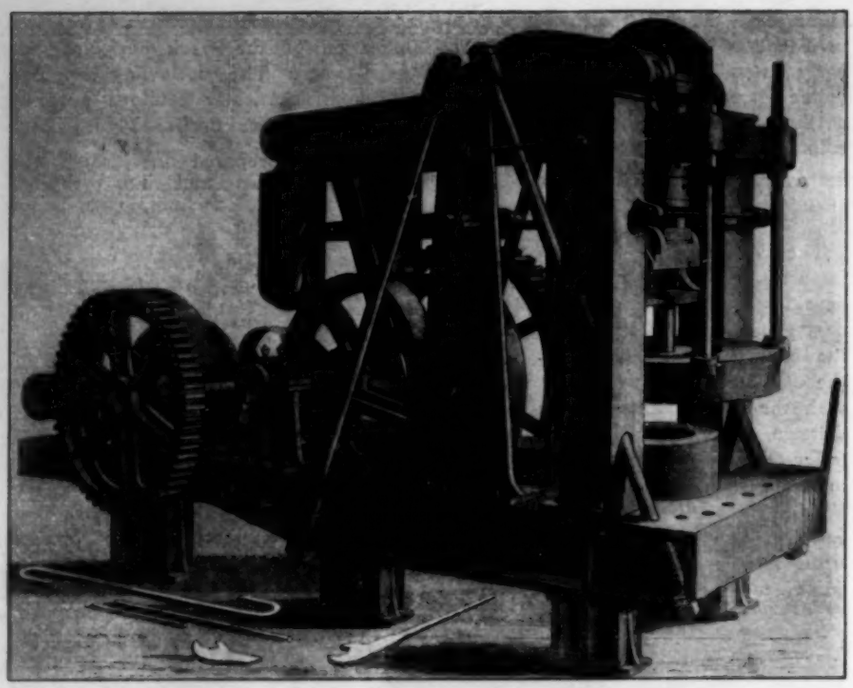
The development of the pressed metal industry from about 1870 until the close of the nineteenth century was gradual but substantial. Most of the presses put into use during this period were for the lighter weight metals and the materials used in the order of importance were as follows: Iron, steel, tinplate, brass, aluminum, copper, zinc, Britannia metal, silver, lead, nickel, gold, platinum. These materials were used either in the form of sheets or sections, the most important being I, T and Z beams, channels, tee-rails and wire. Most of the production up until the beginning of the twentieth century consisted of receptacles for various food products including meats, spices, coffee, tea, etc. Kitchen utensils and some of the lighter hardware novelties were being made by the pressing method but this work was limited to metal of comparatively light gage.

Although the development of heavy

Courtesy American Machinist

HAULING LARGE POWER PRESS THROUGH THE STREETS OF MIDDLETOWN, CONN., NEARLY 50 YEARS AGO

This illustration is reproduced from a photograph taken in 1879. On account of the conditions of the roads, it was necessary to haul the power press about 1½ miles from the factory to the railroad station. Six yoke of strong oxen were borrowed from a neighboring stone quarry for this heavy work. This press was designed by F. C. Fladd, New Canaan, Conn.



TYPICAL HEAVY PRESS DESIGNED ABOUT 1876

At the period when this machine was built, floor space was not an important factor and therefore the gears and cams in this heavy machine are arranged horizontally. In the modern press these details are arranged one above another and large power flat presses now can be built with about half the floor area required by the machine shop above.

gage metal was not rapid until early in the twentieth century, there is plenty of evidence to show that some rather heavy work was done prior to 1900, particularly parts for railroad freight cars. However, examples of this kind were not numerous and it can be truthfully said that the widespread use of pressed metal did not assume importance until early in the last decade when the influence of the flourishing condition of the automobile business, the manufacture of pressed metal parts devoloped almost over-night into an important industry.

It cannot be said that the demand for automobiles alone brought the pressed metal industry to its present status. As a matter of fact, the automobile manufacturers furnished numerous opportunities for the development of engineering materials, many of which were immediately taken up by the pressed metal industry. As the demand for drawn automobile parts increased, the applications in this industry readily suggested similar uses in other industries, and as a result there was a well developed movement about five years ago toward specifying pressed metal parts wherever the material could be used.

From the foregoing it can be readily seen that the pressed metal industry was on a firm basis at the time the United States entered the world war. For this reason the industry was able to make an unusually commendable showing in producing badly needed articles for the army and navy. An attempt was made shortly after the entrance of the United States into the war to survey the plants capable of producing pressed metal parts. The survey covered a total of 125 plants, each employing four to 2575 workmen and distributed as follows:

Michigan	27
Ohio	24
Massachusetts	14
New York	13
Connecticut	9
Illinois	9
Pennsylvania	8
Indiana	7
Wisconsin	7
Other states	7
Total	125

The part played by these plants during the war is well illustrated by the number of articles which were made by the pressed metal process and which were used directly in the war. These include the following:

Cartridge cases	Rifle cartridge clips
Helmets	Tubes for fuzes
Airplane parts	Eye guards
Nose clips for gas masks	Scabbards
Levers for hand grenades	Gun parts
Fuze boxes	Bombs
Fuze socket holders	Armor for motor cars
Booster cases	Kitchen outfits
Breach collar reinforcements	Canteens
Magazines for Browning and Lewis guns	Mess kits
Reels and spools for signal service	Spoons, knives and forks
Identification tags	Drinking cups
	Revolver magazines

Even in the short time which has elapsed since the armistice was signed, the status of the pressed metal industry has undergone marked changes. The number of manufacturers has increased and the products now made cover a wider field than heretofore. Steel of heavy gage is being pressed into articles of intricate shape which are subjected to severe stresses in service.

Offers Prizes for Essays on Economics

Alvan T. Simonds, president, Simonds Mfg. Co., Fitchburg, Mass., is offering two prizes, $1000 and $500, for the two best essays by pupils of high schools and normal schools on the subject "Present Economic Conditions and the Teachings of Adam Smith in 'The Wealth of Nations' ". The dean of the Harvard graduate school of business administration has agreed to be chairman of the board of judges for the contest.

Mr. Simonds is a deep student of economics and is convinced that a great deal of dissatisfaction in the United States is due to the lack of knowledge of economic conditions.

"The Wealth of Nations" was published 144 years ago and Mr. Simonds regards it as "the bible of economics." He states that without study of this book one cannot understand the principles of relationship between capital and labor. He read it while in Harvard from which he graduated in 1899 and has read it 10 times since. It is to encourage the reading of the book to stimulate interest in economics that Mr. Simonds is offering the prizes.

Grades of Ore Shipped by Vessel Tabulated

The tonnage of nonbessemer ore shipped from the Lake Superior district in 1920 was more than double that of the bessemer grade, the figures for the lake shipments having been 37,157,113 and 18,396,157 tons, respectively, bill of lading weights. Shipments of manganiferous ore amounted to 1,542,298 tons, and silicious, 846,534 tons. The following table from data prepared by the Lake Superior Iron Ore association, shows the shipments of the various grades from the six ranges in the Lake Superior district:

Range	Bessemer	Nonbessemer	Manganiferous	Silicious	Total
Mesabi	13,263,984	22,675,372	121,702	65,300	36,126,358
Gogebic	3,195,609	4,377,069	429,706	96,058	8,098,442
Marquette	554,464	3,308,786	.....	444,898	4,308,148
Menominee	534,783	5,297,267	388,393	240,278	6,460,721
Cuyuna	53,094	1,452,724	602,497	.....	2,108,315
Vermilion	794,223	145,895	.....	.....	940,118
Total	18,396,157	37,157,113	1,542,298	846,534	57,942,102

Making Blast Furnace Work Safe

Advancement in Accident Prevention in the Ironmaking Industry Is Due Largely to Labor-Saving Devices and to Close Co-operation between Foremen and Workmen—Suggestions for Overcoming Hazards

BY A. E. MACCOUN

IN PAST years blast furnace work usually was considered the most dangerous in the metallurgical industry and it still will involve a certain amount of danger, even after all safety measures have been taken and the ofrce is trained efficiently in skill and carefulness. The most common dangers arise in the handling of blast furnace gas; the blowing in and blowing out of furnaces; danger due to break-outs, scaffolding, and slipping of furnaces; loss of water supply; bursting tuyeres, etc. To cope successfully with these dangers and many others that are continually arising, requires quick and accurate judgment.

In conformity with the policy of the United States Steel Corp., the Carnegie Steel Co. has spared no expense to improve the working conditions affecting safety and welfare at its plants. This is done by instilling into the foremen and workmen by educational methods the good they are doing for themselves and humanity by active safety work; and by all working together, from the manager of the plant to the humblest workman, great results have been accomplished in the past and even greater will be obtained in the future. The danger of over confidence in work already done has to be guarded against, and at no time should those charged with the responsibility of a safety organization consider they have reduced accidents to a minimum.

Safety inspectors are invaluable for looking after recommendations, investigating accidents, pointing out possible improvements in equipment and methods in organizing safety work, but the responsibility for betterment cannot be shouldered by them. For safety work on a sound basis the foreman must give the subject serious consideration, study, planning and direction, such as is given to operating work. He is the mainstay in accident prevention. The safety of the workman always has been given foremost attention by foremen, but the reduction in accidents, affected in many cases, indicates that this attention has been concerned more with obviously dangerous factors than with injuries due to hand labor, use of hand tools, falls, falling bodies, and similar causes incident to daily work. To these causes, however, the greater number of blast furnace accidents are due.

Instructing New Men

Foremen should be careful to instruct new men as much as possible. Most men can be taught and encouraged to use proper methods of work, but when necessary it should be impressed on them by admonition, warning, suspension and if necessary, discharge, if they are not performing their duties in a satisfactory manner. Certain standards should be aimed at for men as well as for methods of operation and machinery.

Managements at present are valuing foremen by the care they take of their men, as well as by their records for tonnage and costs. Too much importance cannot be placed on weekly meetings of the foremen of different departments with their superintendents and open discussions should be encouraged, so that the ideas of everybody concerned can be talked over with the view of ascertaining what will improve the operations as well as conditions of safety. Every practical suggestion should be adopted; if not, the reason for its rejection should be explained.

A set of rules or notes intended for any particular blast furnace plant is practically useless, or even may be dangerous, if applied to another plant, as they have to be formed to meet the different conditions that arise. When unusual situations arise safety depends on prompt measures taken by the foreman in charge. Some accidents are inevitable, but most accidents can be prevented by care and thoughtfulness and by studying the suggestions made by foremen and men. Too much emphasis cannot be placed on frequent inspections of all machinery around a blast furnace plant, such as engines, boilers, stock yard equipment, furnace tops, bridges, cranes, hoisting equipment, etc., as the prevention of breakdowns often means a large saving in time and labor, as well as safeguarding the lives of the workmen.

The plant should be kept scrupulously clean and in order, and at night should be well lighted. Tools and materials of all kinds should be kept in regular places and not left lying around on floors or passageways where they are likely to obstruct or make passage difficult.

Over 70 per cent of the accidents that occur are due to carelessness on the part of the workmen injured or others. Hand labor and hand tools cause over 40 per cent of the accidents around a blast furnace plant. As in most other work, more attention is usually paid to the big things than to the seemingly less important details, whereas the latter, if neglected, may become serious. Too much attention cannot be given to keeping all hand tools in good shape by returning to the tool room all tools with battered or mushroom heads, cracked handles, or other defects, to be repaired. Efforts should be made to avoid the use of defective wrenches or wrenches too large for the bolts or nuts to be turned. There are many trivial sources of accidents that no man or committee can foresee or in some cases know that they exist, until an accident occurs resulting in an injury to a workman.

Flying and falling bodies cause approximately 20 per cent of the accidents around a blast furnace. Burns from cinder and hot metal result in 15 per cent of blast furnace accidents. The remainder are caused by accidents from machinery, hot water and steam, railroads, asphyxiation, etc. Those figures give an idea of where the accident problem lies.

Safety work starts from the point of delivery of ore, coke and limestone to the furnace yards by railroads. By insisting on clean and well lighted yards, numerous signs in various languages calling attention to small clearances and other dangers where they exist, a considerable degree of safety is obtained. Although the placing of signs in places

From a paper presented at a recent meeting of the Engineer's Society of Western Pennsylvania, Pittsburgh. The author, A. E. Maccoun, is superintendent of blast furnaces, Edgar Thomson works, Carnegie Steel Co., Braddock, Pa.

of danger is often a very good way to avoid accidents, wherever possible safety devices should be installed to act as a prevention, rather than a warning, of possible injuries.

Where electric transfer cars are used, contacts should be thoroughly protected. Walks on the trestle should be kept clean and in good condition, and railings should be provided wherever required. Grids over the ore bunkers should be provided, and ore handling bridges, transfer cars, car dumpers, etc., should be thoroughly equipped everywhere with safety guards and arranged so the main switches can be locked when they are off for repairs. Wherever possible steps should be provided instead of ladders. At track crossings subways should be used as much as possible to keep the men from walking over the tracks. Where it is necessary for men to go down into ore, coke or limestone bins, life belts should always be provided and one man should stay above to watch the men working in the bins. Where empty cars go out of the yard, matters of safety should also be given foremost consideration. Care should be taken to notify the stockyard crew when dumping material into empty or nearly empty bins, so they can keep clear of falling material.

Care should be taken not to leave tools, pieces of scrap, lumps of ore or stone, or pieces of sheet iron, lay around on walks, as they may cause someone to stumble and fall into the bins or stock house. Men should not be allowed to crawl out of hopper cars through the doors. The trestle force should remain on the trestle, and not be allowed to enter the cast houses, boiler or engine houses, or other places where their work does not require them to go. At Edgar Thomson, comfortable rest houses are provided on the trestle for the use of the men when not actively employed in the performance of their duties. Men should keep away from iron or cinder ladles when they are being filled or shifted. This matter of men staying on their own jobs should apply to every department in the plant, as oftentimes accidents happen to men wandering around in places where they do not belong, due to the fact that they are not familiar with the dangers accompanying the different classes of work. At the entrance of each cast house at Edgar Thomson there is a sign warning all who have no direct business in the cast houses to stay out, and thus keep out of danger from gases, bursting tuyeres, etc.

The stock yard crew are required to gage the height of the stock in the furnace regularly. In case the furnace is hanging or "stiff" it is their duty to communicate with the blower of the furnace at once. All possible precautions are taken around the moving machinery in the stockyard to avoid accident. The larry cars are equipped with air, hand and foot brakes, and are provided with safety railings. If persons are working on the track they are required to place a safety sign in the middle of the track, warning the larryman of danger ahead. Locks are provided on switches of hoists, larry cars, etc. The skip incline is covered on the bottom with sheet iron to prevent coke, stone or ore from falling down and injuring anyone. If explosion doors are to be used on top of a furnace, adequate shields should be provided to protect men on the furnace top from a sudden opening of these valves. Tops should be well lighted and safety railings and stops provided so that any of the platforms can be reached with comparative ease and safety. No one is allowed to go on top of a furnace if it is hanging or the stock in the furnace is too low, and in no case should anyone go on top without notifying the general foreman. Warning signs are placed at stairways leading to furnace tops drawing attention to the dangers above.

Organization Details

IN ALL efforts to improve safety conditions the plants' management should take the leading part, the manager acting as chairman of the plant committees, including the superintendents of departments, the details being handled by committees headed by foremen, master mechanics, etc. Workmen's committees, accident and investigating committees, and committees having charge of accident records and bulletin boards, are important factors in creating an active safety spirit among the workmen. The fundamental idea of safety work is that "I am my brother's keeper," and on the thoroughness with which this is brought to the realization of the men, depends the success of the work. If the officials believe that accidents can be prevented and show a determination to prevent them, the rest of the force will reflect this attitude. Any work involving unusual accident hazards should be personally supervised as far as possible by the superintendent of the department, his assistant, the master mechanic, or some other responsible executive.

Using the skip car as a means of conveyance to the top of the furnace is absolutely prohibited. If any work is being done in the skip pit, on the hoist lines or skip itself, movement of the cars is prohibited until the proper signal is given. Also, when blast is off the furnace or the furnace is shut down and men are working on top or down in the cast house, no filling is allowed to be done until the men have gotten away from the tuyeres at the bottom and the dumping hopper on top, and then only on direct order from the foreman. It is necessary that all raw materials such as the limestone, coke, ore, and blast be kept uniform if we are to obtain safe and uniform working of a blast furnace. Thus the safety of many men about a furnace depends indirectly upon the stock yard crew as this uniformity of furnace operation cannot be obtained unless the stock yard men take an interest in their work. Careful weighing and charging of the furnace burden, reporting any difference in the quality of the ore, coke and limestone, constantly watching the movement of the stock in the furnace,—all those things and many others help to prevent heavy slips and other irregularities in the working of the furnace which sometimes have a dangerous effect at the tuyeres, tapping hole, and furnace top.

The use of the Killeen skimmer, iron runners and mechanically operated gates to the various iron and cinder ladles have made a large improvement in the blast furnace cast house. However, a warning sign should be placed at the entrance to the cast house to caution people not to go there unless their work requires that they do so, as there is always danger from the possibility of slips, gases, breakouts, or bursting tuyeres. A cast house should be kept scrupulously clean. All long handled tools, bars, drills, etc., should be kept on racks where they belong and not allowed to be scattered around the floor, where one could stumble over them. Men should not be allowed to go on the bustle pipe unless the hot blastman or keeper is notified, as there is always danger from gas around this part of the furnace.

Strict watch should be kept on men who are required to be around the furnace front. Much care should be taken that the skimmer, troughs, runners, and spouts are well grouted with loam and are thoroughly dried and warm before the next cast, in order to prevent boilings. Safety in

blast furnace operation also has been promoted by the use of the automatic gun for the stopping of the tapping hole and the cinder notch botter. The automatic clay gun is operated by steam at a safe distance from the tapping hole. Chain protectors should be used in front of cinder notch and tapping hole, and shields should be placed over the main trough when driving in the bar for the tapping of the furnace.

In the past many accidents occurred when watering down the trough after a cast, due to small explosions blowing fragments of hot metal into the air and striking the man directing the stream of water, and in some cases resulted in the loss of sight. At Edgar Thomson furnaces, to avoid such accidents, permanent markers have been placed on the floors of the cast houses at what is considered a safe distance from the trough, the men not being permitted to approach any nearer while the watering down is being done.

Should Wear Goggles

Goggles should be worn at casting time and when looking into or working on the tuyeres. To give the men more confidence in goggles and to furnish incentive for their use, it is well to have the foremen and blowers wear them, especially during the casting period. We have found that due to all men's sight not being the same, trouble is often encountered in getting some men to wear goggles, as it impairs or interferes with their vision, but in the great majority of cases they can be worn if fitted to the man, with little inconvenience.

It is important to see that the discharge pipes from plates, tuyeres and coolers are not obstructed by any dirt or other material that may have come in with the water through the strainers and lodged in the pipes. Neglect of this is almost sure to lead to bad messes at the tuyeres or blow pipes, and often results in accidents to furnace front men.

All the cold wind and gas valves on stoves should be provided with locks. In cleaning or inspecting stoves, gas and air should be shut off, the valves locked, the stove drafted through and cooled before anyone is allowed to enter. When changing stoves each operation should be performed in proper sequence or disastrous results may follow. When gas is turned in a stove, if it does not ignite immediately, the burner should be pulled out and a piece of burning waste placed in the burner opening and the burner again pushed slowly into place. Care must be taken that the gas is ignited properly. When blowing off a stove, men should be kept away from the blow-off door. No one should handle doors, valves, or burners unless directed by the blower or hot blastman. All gas leaks around burners or mains should be watched for and reported immediately. No nuts should be tightened on doors or blow-off valves while the stove is on blast, as the bolt might break with consequent death or injury to the tightener.

In tearing the brickwork out of a hot stove, the stove should be air drafted for at least three days before water is used for cooling it down, and then it should only be used with discretion, and in the form of a spray. This is especially important with stoves using dirty gas, in order to prevent explosions. It is also advisable that no men be allowed to work around the stove while it is being watered.

The pig machine is a part of the equipment of a blast furnace plant, the importance of which is too often underestimated and safety equipment often suffers in consequence.

The pig machine having to convert the product of the entire furnace plant from molten metal into cast pigs has to handle an enormous amount of material in a comparatively short space of time and frequently additional demands are made upon it to dispose of surplus material caused by irregular operation in the rest of the plant. In consequence of this, the organization must be flexible and capable of working at times at a speed greatly beyond normal, all of which tends to make the safety problem serious as the molten iron handled is a material of dangerous possibilities in case any accident occurs.

The metal is handled in large iron ladles containing 30 to 35 tons of molten iron from the furnaces and possibility of transportation accidents has been considered by installing a system of block signals on our railway tracks from the yard to the pig machine pouring platform. The ladles are moved into place at the pouring end of the machine and are poured by individual electrically operated cranes, each provided with safety hoist lines which operate in case the main hoist breaks or fails to work. The operators for these cranes are fully protected by a fire proof metal house beyond reach of any splash from the ladles and the men on the ladle pouring floor directing the stream of metal also are sheltered by sheet metal houses. Iron is poured from the ladles into iron pig molds and after setting in them is further cooled by water sprays and discharged into railroad cars. All places around the machine where it is necessary that men be located, are provided with platforms and safety railings and all chance of men being injured by falling material sticking in molds on their return is prevented by suitable guard rails and plates. All men working around the hot metal must wear their safety goggles as protection against sparks. These goggles are of a pattern especially developed at this plant and are furnished to the men, being replaced whenever it becomes necessary through accident. When the large tonnage of material handled at a pig machine at high speed and the amount of moving machinery involved are considered, the fact that accidents are most infrequent here is an encouraging point in the safety campaign.

All iron coming from the blast furnaces is taken from the distributing points in fire-brick lined steel ladles mounted on railroad trucks. After the metal has been poured from these ladles into the various mixers or at the pig machine it is necessary to rake out any dirt which has accumulated in them so that they will be in clean shape for the next cast of the furnaces. The best practice in this respect is to take the ladle from its truck and empty it out completely into a cast-iron cinder ladle or some similar receptacle avoiding the use of water as much as possible. Any adhering pieces of scrap are broken off the ladle lining with bars, the lining patched with clay and brick and the ladle replaced on its truck ready for use. In this work the main hazards are those of occasional sparks of iron from hot kish or graphite when the ladle is emptied and the usual mechanical hazards of hammer and bar work. Much of this danger can be prevented by the proper use of safety goggles and by careful supervision on the part of foremen.

Boiler House Dangers

Particular attention must be paid to a blast furnace boiler house. When a furnace is taken off at casting time, changing a tuyere or for any other reason, close attention should be paid to signals for reduced blast and the gas regulated accordingly. Failure to do this may cause an explosion. It is our practice to always keep a minimum of 2 inches of gas in the mains at a boiler house. On a gas fired boiler house gas leaks must be carefully watched and eliminated. Men should not be allowed to visit or loiter around a boiler house un-

less they have business there, as they are liable to be injured or become gassed.

When replacing tubes in boilers or otherwise repairing them inside, the following precautions are taken. To keep steam and hot water from coming into the boiler, connections are broken and 1-16-inch plate blanks are placed in the steam and water lines, in addition to which the valves are locked with padlock and chain. The gas line is also blanked off under the burner, the blank being mudded up to prevent any gas leaking in. No men are allowed to enter a boiler until the foreman personally is sure that all these precautions have been taken.

Blowing engine rooms should be given careful attention. Two duplicate electric signal whistles should be installed in a cast house at different points to notify the engine room of any immediate need for reduction of blast to the furnace, two whistles being necessary, as in case of a bursted tuyere or other accident, the blower is often unable to reach the whistle switch located at the cast house record board, and has to communicate with the engine room by the use of the other switch, placed preferably on the opposite side of the furnace.

Inspect Engines Monthly

Engines should be thoroughly inspected monthly, especial attention being paid to clearance of cylinders. Records should be kept of these inspections. No one should be allowed to enter the cylinders of an engine without blocking the fly wheel, placing blocks in the cylinders, opening all drains to prevent the entry of steam and hot water, and placing a danger sign on the wheel of the throttle valve.

No grease, tools, etc., should be left laying around on engine platforms. All places of danger in an engine room, such as the fly wheel pits, should be protected with guard rails. It is considered good practice to have the engines equipped with automatic stop valves to function in case the governor belt should break or the governor itself become disabled.

It is our practice always to keep blowing engine turning over on a furnace when the blow pipes are in place. This prevents any gas coming back through the stoves or mixer valve and setting fire to the cold blast pipe, which would cause serious damage. The mixer valve always should be closed before taking a furnace off We also have several steam connections in each engine room and in each cold blast main to open in case fire should start in this pipe. These connections are fitted with two valves with a connection between, which is always left open, so that any leakage of steam can be seen immediately.

When it is necessary to do repair work on transfer cars, bridges, larry cars, car dumpers, hoists, cranes, etc., the main switches controlling this machinery should be locked with padlocks, this lock to be removed by the repairman when the work is completed. Where individual switches are used for the operation of motors they should be enclosed in steel boxes, the switch to be operated from the outside by means of a handle.

All the electrically operated equipment at Edgar Thomson blast furnaces is of modern design,—all gears are covered, and all possible safeguards are employed. Where stairways and ladders are necessary to enable men to get to and from their work, for instance on our ore bridges, such ladders are provided with back guards. When necessary to send men to do work around the blast furnace proper, such as repairs to lighting around bosh and top, two or more men are always detailed on the job where there is any danger from leaking gas.

At the few places around a furnace plant where it is necessary to have high tension current, the switches should be placed in an isolated position, in a separate room if possible. If this cannot be arranged, these switches should be screened off from the rest of the room to prevent men from coming into contact with the high voltage. The room or screened off portion where such switches are installed should be kept locked at all times, and no one permitted to enter except an authorized operator or an electrical inspector.

All hoist houses should be kept locked, only authorized persons being allowed to enter. Protecting guards should be placed over all conductor rails used in connection with stock yard larry cars, transfer cars, etc. This is especially necessary in the case of the conductor rails feeding the larry cars, to prevent the larry car operator hitting the feed rail with his bar when loosening up the ore in the bins. The conductor rails along the trestle at Edgar Thomson works are run under the trestle walk, which is built of steel and concrete and thus forms a good protection.

The careful handling of blast furnace gas is probably the most important of all the safety precautions that must be observed around a blast furnace plant. The blast furnace superintendents' association of the Carnegie Steel Co. has given this important subject a great amount of thought and study. The details of our furnace operations are gone into at our monthly meetings and the best methods decided on, so that in most of our plants we follow the same practice as closely as conditions will warrant. Some of the most important of these methods affecting safety will be given briefly.

Greatest Hazard to Leakage

The greatest hazards are due to the leakage of gas through furnace walls, foundations, and surroundings. This especially is dangerous in banking and blowing up on furnaces after shut-downs, but we must at all times watch closely all men working around the stoves, gas washers, gas engines, furnace tops, gas fired boilers, etc., and relief gangs should be organized and convenient pulmotor stations placed around a plant with experienced operators available at all times. Gas helmets also are kept ready for instant use at these stations. Small building should be located where the use of these helmets can be demonstrated in a room filled with blast furnace gas, and in this way instill more confidence in the men in their use.

To prevent explosions when bleeding gas into a flue, precautions should be taken to force all the air out of the far end before attempting to ignite the gas. This applies also when connecting a furnace on a gas main after starting up. Steam often is used successfully to expel the air from the gas flues or dust catchers.

Where is it necessary to send a man into a place protected only by a water valve, the overflow of the valve should be watched closely, the bell on valve clamped securely and the men provided with a life line or gas helmet and closely watched. When a furnace is to be relined or repaired, and men are required to work inside, careful watch should be kept on the water valve, and the goggle valve on the main should be closed.

Care also is taken when accidents have occurred to prevent delayed treatment cases, which often result seriously by neglect. The emergency hospital facilities are being improved continually and everything possible is provided for quick relief in case of accidents, cases containing stretchers, blankets, and etc., being located at every cast house, engine room, boiler house, etc., around the plant.

Britain's Exports Show Big Gain

In Two Years Great Britain Has Regained Two-Thirds of Her Prewar Foreign Steel Trade—Her Overseas Business Is Growing Much Faster than That of the United States

BY H. COLE ESTEP

European Manager of The Iron Trade Review

SINCE the war British exports of iron and steel products have doubled, while in the same period American exports have decreased 10 per cent. At the same time American exports are still 178 per cent above the prewar level of 1913, while those from Great Britain are only 66 per cent of the prewar standard. But on the other hand Great Britain increased her iron and steel exports last year, compared with 1919, by 46 per cent, whereas American producers were able to increase the foreign shipments by only 12 per cent. In other words, in the last two years Great Britain's export trade in iron and steel has been growing many times as fast as that of the United States, but nevertheless America's hold on the international markets is still so preponderantly great that her position has not yet been seriously threatened. It is time, however, for Americans in the export field to stop, look, and listen to what is going on across the Atlantic.

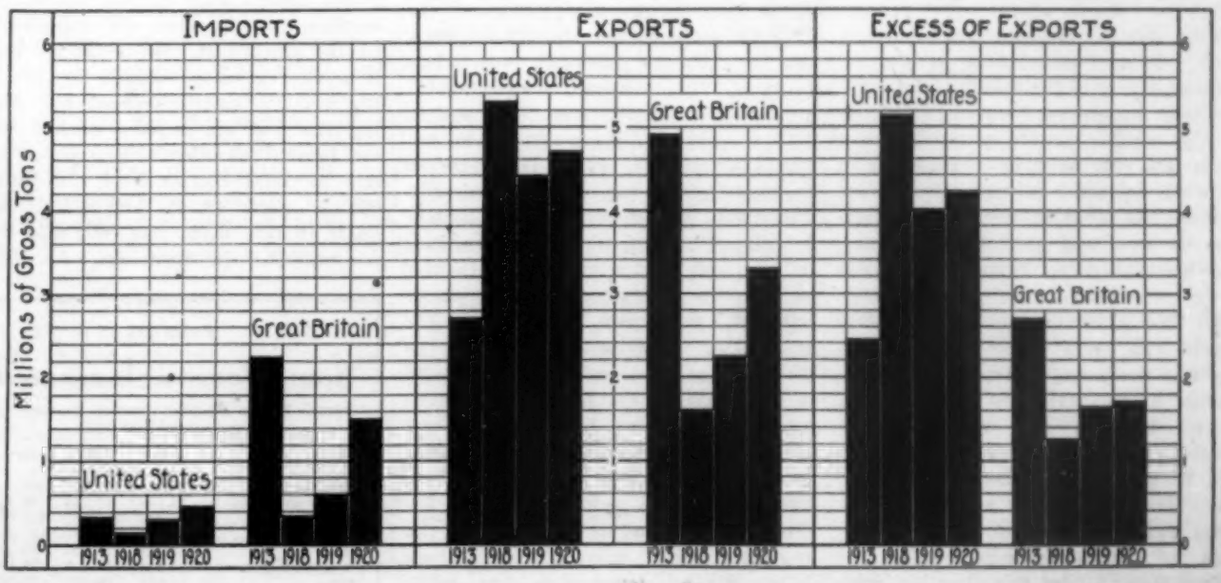
The war brought about a complete realignment of forces in the iron and steel export field. In the halcyon days of 1913 and before, Germany's international trade in iron and steel was well ahead of that of any other nation, although Great Britain was a relatively close second. The export trade of each of the European countries was double that of the United States. Taken together, their overseas shipments were four times those of the United States. In 1913 Germany exported 5,664,000 gross tons of iron and steel products; Great Britain's total was 5,049,000 tons; and that of the United States 2,746,000 tons.

Our New Competitor

The war knocked Germany out of the ring. In the two years and a quarter which have elapsed since the armistice, the great fallen empire has been able to make but little recovery. In 1918 her iron and steel exports were only about 20,000 tons; in 1919 they were about 120,000 tons and last year perhaps 250,000 tons. These figures are estimates; in a shamefaced way Germany is retarding the announcement of accurate statistics. At all events, her exports are not now more than 4 or 5 per cent of her proud prewar figures, and although her trade seems destined to show large increases this year her permanent losses of productive capacity and the destruction of her worldwide selling organizations have been so complete that it does not seem possible for Germany to be much of a factor in international trade for many years to come. Germany's position as the world's leading iron and steel exporter has been decisively and it is believed permanently superseded by the United States.

Little Belgium has been rapidly recovering her export business, but at the best her production can be only one-fifth of that of Great Britain and a twentieth of that of America. Therefore, although she may be a factor, particularly on a declining market as at present, she cannot hope to sit in at the table where the high stakes are being played. France, with reference to export trade seems to be in more or less the same position, with the addition of having a large internal demand and tremendous organizing problems to solve. Of all the nations of Europe only Great Britain has emerged from the war and its aftermath with increased production and a strong grip on her export business. She is the real competitor of the United States in the iron and steel trade of the world. It now appears that it is with Britain, and Britain alone, that American producers and exporters will have to reckon seriously during the next decade.

The question then arises as to just what Great Britain is doing in the ex-



A COMPARISON OF THE IRON AND STEEL IMPORTS, EXPORTS AND BALANCE OF TRADE OF THE UNITED STATES AND GREAT BRITAIN FOR 1913, 1918, 1919 AND 1920

port field. The answer, metaphorically, is easy. John Bull is marching on.

Since the war Great Britain's record in iron and steel exports has been one of continuous and steady progress. The publication of detailed figures for 1920 by the board of trade now makes definite analyses and comparisons possible. In 1918, the United Kingdom's iron and steel exports were 1,618,998 gross tons. During the 10 months of that year England was fighting with maximum intensity. In 1919, her exports increased to 2,262,232 tons. This shows a gain of 40 per cent over 1918. In 1920, her exports rose again, reaching 3,298,578 tons, according to board of trade returns. The increase over 1919 was 46 per cent, or about the same as that of 1918 over 1919.

This record was made under adverse business conditions during at least four months of last year, during which period the demand fell off tremendously, while during the entire year sterling exchange was at a premium in every country except the United States, Holland and Switzerland. At the same time production and shipments in the British Isles were seriously hampered, first in 1919 by a big national railway strike, and again last year by a three-weeks strike of coal miners. Nevertheless Great Britain has doubled her export business in iron and steel in two years, and brought it up from 33 per cent to 66 per cent of the prewar standard. No other nation in the Old World can show a record which in any way compares with this. The conclusion follows naturally that although British trade is sure to suffer from existing worldwide conditions as to lack of demand, for the first time in seven years there is a surplus of material available for export and a surplus of ocean tonnage under the British flag. Under this situation, with the headway already made, British mills may be expected to hold their own in the future fight for steel business in the markets of the world.

To understand Britain's position in the international iron and steel field more thoroughly, some further study is necessary. Imports are a prominent factor, since practically all of this tonnage is re-exported after re-rolling, or fabricating. Details of imports and exports, together with the balance of trade in iron and steel products, and percentages of increase or decrease, for 1913 and the three years just past, covering both the United States and Great Britain, are given in Table I. The same statistics are graphically presented in the accompanying chart. The latter shows particularly clearly the relatively rapid increase in British exports and in the favorable balance of her iron and steel trade, compared with the United States, since the war.

As Table I shows, British imports of iron and steel products were only 342,522 gross tons in 1918. This was 15 per cent of the prewar figure. In 1919 the imports rose to 621,614 tons, and in 1920 to 1,544,228 tons. Imports in 1919, therefore, showed an increase of 82 per cent over 1918, and in 1920, a gain of 350 per cent over the last year of the war. The increase in imports last year, as compared with 1919, was 148 per cent. Great Britain is obliged to import large quantities of iron and steel because her pig iron capacity is, at present, only about 9,000,000 tons per year, while her steelmaking capacity is perhaps 11,000,000 tons, and her rolling capacity is in excess of the latter. She makes up the deficiencies by importing raw and semifinished materials in large quantities for further manufacture. This has always been a lucrative trade for Great Britain, and at the moment, the re-rolling mills, using cheap foreign billets, are doing a good business while on the other hand those connected with the steelworks are idle in many cases.

Before the war a large proportion of British imports of semifinished materials were from Germany. In 1913, in sheet bars alone, Germany sent to England 267,519 tons. In 1920 she shipped only 34 tons! Last year, on the other hand, Great Britian was one of America's best customers, but American producers should not, perhaps, overlook the fact that what she did was to buy American pig iron and semifinished steel, convert it and sell it again in foreign markets in competition with their own finished products. But the excess of productve capacity, under normal conditions, in the United States, is such that this business is both lucrative and valuable to the latter. It is important, therefore, to be familiar with the activities of Belgium as a competitor in the British market.

The growth of Belgian exports of semifinished steel to the United Kingdom, and the corresponding decline of American business is one of the outstanding features of the international steel trade of 1920. The details of this movement are presented in Table III. It shows that the United States cannot hope to hold the world's markets just because she happens to be the world's largest producer. Here is a case of dispossession by one of the world's smallest producers. During the first six months of last year the average monthly shipments of billets to Great Britain from the United States were 13,045 tons; Belgium's share of this trade was only 226 tons per month. In September American

Table 1

British and American Trade Compared

Year	Imports Gross tons	Exports Gross tons	Excess of exports Gross tons	Exports only: Per cent of 1913	Exports only: Per cent increase since armistice	Exports only: Per cent increase, 1920 over 1919
UNITED STATES						
1913	317,260	2,746,000	2,428,940	100	...	..
1918	169,110	5,338,019	5,168,909	195	...	..
1919	322,264	4,397,295	4,075,031	160	*17	..
1920	421,274	4,934,087	4,512,813	179	* 7.5	12
GREAT BRITAIN						
1913	2,230,955	4,969,224	2,738,269	100	...	..
1918	342,522	1,618,998	1,276,476	33	...	..
1919	621,614	2,262,232	1,640,618	46	40	..
1920	1,544,228	3,298,578	1,754,350	66	100	46

*Decrease.

Table II

What Belgium Is Doing

American and Belgium Exports of Billets to Great Britain in 1920

Period	Tonnage: American	Tonnage: Belgian	Price per ton c.i.f., at current exchange: American	Price per ton c.i.f., at current exchange: Belgian
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July	13,796	....	69.25	.....
August	19,188	1,268	71.25	71.25
September	16,174	2,767	78 25	69.40
October	9,932	5,619	76 75	73.00
November	3,969	10,315	81.25	69.50
December	4,839	15,904	82.00	63.00

Table III

Some Postwar Increases

British Exports Analyzed Showing Increases in 1920 Compared with 1913

Product	1913	1919	1920
	Gross tons		
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Strips and hoops	45,708	47,716	56,521
Plates	133,949	238,570	198,851
Black plate	68,152	133,297	138,100
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Wire rope	28,964	25,589	31,157
Wire	33,397	18,052	33,529

shipments had grown to 16,174 gross tons, and Belgium's to 2767 tons. In December, however, the United States sent over only 4839 tons compared with Belgium's 15,904 tons. In the last quarter American shipments aggregated 18,740 tons and those of Belgium 31,838 tons.

The shifting in the relative prices tells the story. During the first half of the year billets from the United States were billed to England at an average of $58 a ton c.i.f.; the Belgian price was $61.75 c.i.f. In December the prices were $82 and $63 respectively. But since export billings always lag considerably behind the market, in December Belgium made sales as low as $39.50 per ton c.i.f., while at the same time America's best figures were not under $53. The American makers have been knocked out in this case, as in others, by the rate of exchange, Belgian francs being at a discount of over 50 per cent in London and dollars at a premium of 25 per cent. These figures are well worthy of serious study. They show the nature of the battle with which export trade is faced, and why, compared with that of the leading European producers, American overseas trade is declining.

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In spite of her growing imports, Great Britain has pushed her export trade since the war so successfully that the balance of trade in her favor has grown steadily. As shown in Table I, in 1918, her excess of exports was 1,276,476 gross tons; in 1919 it increased to 1,640,618 gross tons, and in 1920 to 1,754,350 tons. The increase in 1919 over 1918 was 28 per cent; that of 1920 over 1918 was 37 per cent, while that of 1920 over 1919 was 7 per cent.

In certain lines Great Britain's exports last year exceeded those of before the war by substantial margins, in spite of the fact that the aggregate of exports in 1920 was only 66 per cent of that of 1913. These increases, which are significant, are shown in Table III. The products included are steel bars, strips, hoops, plates, black plates for tinning, railway car and locomotive axles and tires, wire rope, and wire products of all kinds. In the case of at least two of these products, bars and wire, American exports showed a falling off compared with 1919, whereas the British exports were largely increased.

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It is important to know who one's competitor's customers are. The British colonies are still the biggest customers of the mother country, so far as iron and steel products are concerned. An analysis of the destinations of British iron and steel exports vividly illustrates the economic unity of the British Empire. For instance, out of total exports in November, 1920 of 237,700 gross tons, the British colonies took 83,600 tons, or nearly a third. India and the British East Indies alone absorbed 45,000 tons in November. With the exception of Canada, all of the British dominions do more business in iron and steel with the mother country than they do with the United States. Outside of Canada, America's position is relatively stronger in India than anywhere else in the empire. Up to date American makers do not seem to have succeeded in getting more than a small fraction of the business available in Australasia and British South Africa, both English-speaking countries of a progressive and stable character. In these dominions British mills do eight times as much business as American producers. It is in South America that the United States has the greatest advantage of her British competitor. In those countries America does 10 times as much business as the United Kingdom.

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A 220-page book entitled *Research and Methods of Analysis of Iron and Steel* has been issued by the American Rolling Mill Co., Middletown, O., in which a large number of ancient irons are described and their history and chemical analysis given. Considerable data on the subject of research on corrosion is presented which deals particularly with the gas content of iron and steel and with the influence of various gases upon the rate of corrosion. Several views of the apparatus used for magnetic testing are shown including those used for determining the permeability value, the core loss and the aging coefficient. The section entitled "Metallurgical Control" deals with scientific heat treatment, thermoelectric and optical pyrometers, microscopic tests and physical tests including methods for determining tensile strength, hardness, ductility and alternating stress.

port field. The answer, metaphorically, is easy. John Bull is marching on.

Since the war Great Britain's record in iron and steel exports has been one of continuous and steady progress. The publication of detailed figures for 1920 by the board of trade now makes definite analyses and comparisons possible. In 1918, the United Kingdom's iron and steel exports were 1,618,998 gross tons. During the 10 months of that year England was fighting with maximum intensity. In 1919, her exports increased to 2,262,232 tons. This shows a gain of 40 per cent over 1918. In 1920, her exports rose again, reaching 3,298,578 tons, according to board of trade returns. The increase over 1919 was 46 per cent, or about the same as that of 1918 over 1919.

This record was made under adverse business conditions during at least four months of last year, during which period the demand fell off tremendously, while during the entire year sterling exchange was at a premium in every country except the United States, Holland and Switzerland. At the same time production and shipments in the British Isles were seriously hampered, first in 1919 by a big national railway strike, and again last year by a three-weeks strike of coal miners. Nevertheless Great Britain has doubled her export business in iron and steel in two years, and brought it up from 33 per cent to 66 per cent of the prewar standard. No other nation in the Old World can show a record which in any way compares with this. The conclusion follows naturally that although British trade is sure to suffer from existing worldwide conditions as to lack of demand, for the first time in seven years there is a surplus of material available for export and a surplus of ocean tonnage under the British flag. Under this situation, with the headway already made, British mills may be expected to hold their own in the future fight for steel business in the markets of the world.

To understand Britain's position in the international iron and steel field more thoroughly, some further study is necessary. Imports are a promiment factor, since practically all of this tonnage is re-exported after re-rolling, or fabricating. Details of imports and exports, together with the balance of trade in iron and steel products, and percentages of increase or decrease, for 1913 and the three years just past, covering both the United States and Great Britain, are given in Table I. The same statistics are graphically presented in the accompanying chart. The latter shows particularly clearly the relatively rapid increase in British exports and in the favorable balance of her iron and steel trade, compared with the United States, since the war.

As Table I shows, British imports of iron and steel products were only 342,522 gross tons in 1918. This was 15 per cent of the prewar figure. In 1919 the imports rose to 621,614 tons, and in 1920 to 1,544,228 tons. Imports in 1919, therefore, showed an increase of 82 per cent over 1918, and in 1920, a gain of 350 per cent over the last year of the war. The increase in imports last year, as compared with 1919, was 148 per cent. Great Britain is obliged to import large quantities of iron and steel because her pig iron capacity is, at present, only about 9,000,000 tons per year, while her steelmaking capacity is perhaps 11,000,000 tons, and her rolling capacity is in excess of the latter. She makes up the deficiencies by importing raw and semifinished materials in large quantities for further manufacture. This has always been a lucrative trade for Great Britain, and at the moment, the re-rolling mills, using cheap foreign billets, are doing a good business while on the other hand those connected with the steelworks are idle in many cases.

Before the war a large proportion of British imports of semifinished materials were from Germany. In 1913, in sheet bars alone, Germany sent to England 267,519 tons. In 1920 she shipped only 34 tons! Last year, on the other hand, Great Britian was one of America's best customers, but American producers should not, perhaps, overlook the fact that what she did was to buy American pig iron and semifinished steel, convert it and sell it again in foreign markets in competition with their own finished products. But the excess of productve capacity, under normal conditions, in the United States, is such that this business is both lucrative and valuable to the latter. It is important, therefore, to be familiar with the activities of Belgium as a competitor in the British market.

The growth of Belgian exports of semifinished steel to the United Kingdom, and the corresponding decline of American business is one of the outstanding features of the international steel trade of 1920. The details of this movement are presented in Table III. It shows that the United States cannot hope to hold the world's markets just because she happens to be the world's largest producer. Here is a case of dispossession by one of the world's smallest producers. During the first six months of last year the average monthly shipments of billets to Great Britain from the United States were 13,045 tons; Belgium's share of this trade was only 226 tons per month. In September American

Table 1

British and American Trade Compared

UNITED STATES

Year	Imports Gross tons	Exports Gross tons	Excess of exports Gross tons	Exports only: Per cent of 1913	Exports only: Per cent increase since armistice	Exports only: Per cent increase, 1920 over 1919
1913	317,260	2,746,000	2,428,940	100	...	..
1918	169,110	5,338,019	5,168,900	195	...	..
1919	322,264	4,397,295	4,075,031	160	*17	..
1920	421,274	4,934,087	4,512,813	179	* 7.5	12
GREAT BRITAIN						
1913	2,230,955	4,969,224	2,738,269	100	...	..
1918	342,522	1,618,998	1,276,476	33	...	..
1919	621,614	2,262,232	1,640,618	46	40	..
1920	1,544,228	3,298,578	1,754,350	66	100	46

*Decrease.

Table II

What Belgium Is Doing

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American Malleable Cast Iron

A Series of Related Articles Dealing with the Development of the Industry, Modern Methods of Manufacture, Metallurgical Principles Involved and the Properties of American Malleable Iron

BY H. A. SCHWARTZ

Chapter V—Compression, Cross Bending and Shear

COMPRESSION is exactly the reverse of tension and is a stress often applied to malleable cast iron. In products free from carbon, such as steel and wrought iron, the elastic properties in compression are very nearly the same as those in tension. In cast iron the resistance to compression is considerably higher than that to tension, as may be expected from the fact that the graphite flakes completely enclosed in iron are less harmful under compression loads than to tension.

Difficulty with Ductile Metals

Ordinary cast iron specimens fail in compression by shattering into fragments, usually with but little bulging at the center. It therefore is possible to determine definitely the ultimate strength of a given specimen. The ductile metals, soft steel for instance, are not so definite in their behavior. Instead of reaching a load where they fail completely by shearing on planes at 45 degrees to the direction of applied stress or by rupturing into fragments and ceasing to sustain any load, these ductile metals merely flow as the load is applied and never reach a point of complete rupture. Thus a cylindrical specimen of steel takes a barrel-shaped form, increasing in diameter and decreasing in length. The increased diameter reduces the intensity of the applied stress and more load therefore can be applied. No actual point of failure can be established, but there is a limit beyond which distortion of a commercial detail would be equivalent to failure.

Malleable cast iron, being capable of great plastic deformation, behaves in this manner under compression, as indicated in the two stress strain diagrams shown in Fig. 1. Curve *B* in this diagram indicates the behavior of the same material but not the same specimen from which the tensile diagram, Fig. 3, Chapter IV, was charted.

It will be seen that no definite point of failure can be found up to a load of 90,000 pounds per square inch. The permissible intensity of compressive stress depends therefore on the permanent set which can be tolerated. The graph readily permits of the selection of the load corresponding to any assumed condition of this kind. Note the general similarity of the elastic constants in tension and compression. The proportional limit is 15,000 pounds per square inch in tension and somewhere above 13,000 pounds per square inch in compression. The modulus of elasticity in tension is 25,000,000 pounds per square inch as compared with 22,000,000 pounds per square inch in compression. Therefore the material behaves in a manner very similar to soft steel under the two systems of loading.

Stresses More Complex

The foregoing applies only to pure compression loads, which exist only in specimens in which the height is not much greater than the diameter. In longer columns it is practically impossible to keep the axis of the specimen exactly in line with the direction of load, the column springs out of line and the stresses become more complex. Tests on columns with fixed ends $\frac{5}{8}$-inch in diameter and 10.6 inches high indicated that up to the proportional limit the modulus of elasticity is about 16,000,000 pounds per square inch. The fact that this figure is materially less than that obtained in pure compression would seem to indicate that even below the proportional limit the stress is not a purely concentric compressive one. In this column a very definite failure at 30,000 pounds per square inch was observed.

Stresses in Columns

The yield point is quite definitely marked at 25,000 pounds per square inch. Insufficient data are at hand to warrant the very definite acceptance of any special column formula for malleable cast iron. The columns tested have a ratio of length to diameter of about 17 and therefore are more slender than the average column in actual use. Hence calculations based on an ultimate strength of 25,000 pounds per square inch for strut details should be amply safe.

A well known formula for cast iron columns with safety factor of 6 is:

$$\text{Safe load} = \frac{13{,}333 \times \text{area of column}}{1 + \dfrac{(\text{column length})^2}{266 \times (\text{diameter of column})^2}}$$

This formula is equivalent to the statement that the ultimate strength for cast iron columns is equal to

$$\frac{80{,}000 \text{ pounds per square inch}}{1 + \dfrac{1}{266}\left(\dfrac{L}{D}\right)^2}$$

The ultimate strength of the malleable columns tested was 30,000 pounds per square inch, the ratio L/D being 17. If a malleable column is subject to the same general laws as a gray iron column then to conform to the observed conditions the ulti-

Invite Discussion

THIS is the fifth of a series of articles dealing with the American malleable cast iron industry. The first installment appeared in the Dec. 2 issue of THE IRON TRADE REVIEW, *the second in the issue of Jan. 13, the third, Feb. 3 and the fourth, Feb. 17.*

In view of the fact that various authorities differ sharply on many points in the metallurgy and methods of handling malleable iron, there doubtless are some readers of THE IRON TRADE REVIEW *who will take exception to some of the statements of the author. In the interest of better malleable iron, we solicit constructive criticism on this series of articles and shall be glad to hear from those who wish to discuss points that have been brought out in the chapters published thus far.*

mate strength of a malleable column will be

$$\frac{\text{62,000 pounds per square inch}}{1 + \frac{1}{266}\left(\frac{L}{D}\right)^2}$$

This formula applied to the specimens tested in pure compression would give a breaking load nearly 62,000 pounds at which figure the material was still carrying load but had badly deformed.

On the basis of a safety factor of 6 on which the formulas were developed the safe crushing strength of malleable comes out 10,300 pounds per square inch, which is well below the proportional limit.

It is the writer's opinion that the foregoing formula can be safely used as a basis of design. The safety factor could probably be reduced readily to 5 and possibly to 4 without serious risk. For hollow cylinders Kidder uses the value 1-400 instead of 1-266 in the above formula; 1-500 for a rectangle and 1-135 for an equal armed cross.

Cross Bending Stresses

When the material is used in the form of a beam, it is subject to cross bending stresses. This type of loading is very common in practice and is readily reproduced in a testing machine. The specifications of the American Society for Testing Materials before 1918 and of the United States railway administration provided for cross bending test results about equivalent to a modulus of rupture or apparent maximum fiber stress of 64,000 pounds per square inch. This value is decidedly too low to correspond to the required tensile strength. The modulus of rupture seems to be about twice the ultimate tensile strength of the product, the proportional limit corresponding to a fiber stress about equal to the ultimate strength in tension. While not absolutely exact quantitatively, the foregoing statements do express the general relationship. Thus a specimen cast from metal having a tensile strength of about 51000 pounds per square inch, showed a proportional limit of 50,500 pounds per square inch, a yield point of 72,000 pounds per square inch and a modulus of rupture of 113,000 pounds per square inch.

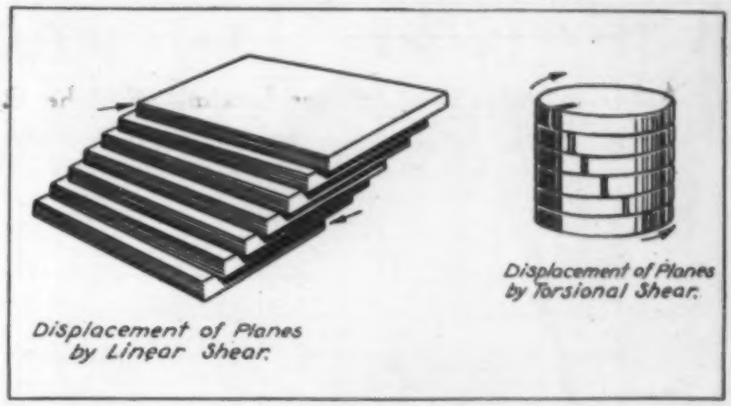


FIG. 2—DISPLACEMENT OF PLANES BY LINEAR SHEAR AND (AT RIGHT) BY TORSIONAL SHEAR

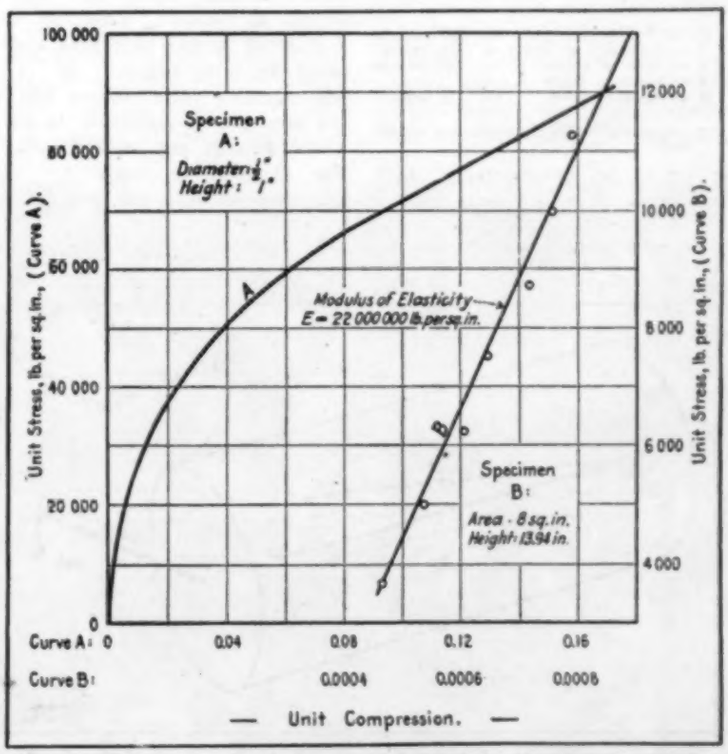


FIG. 1—STRESS STRAIN DIAGRAM OF MALLEABLE CAST IRON IN COMPRESSION

Neutral Axis

It is interesting to discuss why the modulus of rupture can be higher than either the tensile or compression strength of the material. When a specimen is bent there is a tendency to compress the material on one side and to stretch it on the other. Somewhere between there is a so-called neutral axis where there is no change of length. In material in which the elastic behavior in tension and compression is the same the neutral axis is midway across the section. The surface fibers of the specimen are strained most under such a condition, the compression or stretch decreasing—uniformly as the neutral axis is approached. As long as the material is perfectly elastic the intensity of stress, being proportional to intensity of strain also varies uniformly each way from the neutral axis. Accordingly the material behaves as a perfectly elastic body as long as the outer fiber is not loaded beyond the proportional limit. However, after that loading is passed part of the specimen is subject to plastic deformation. The in-

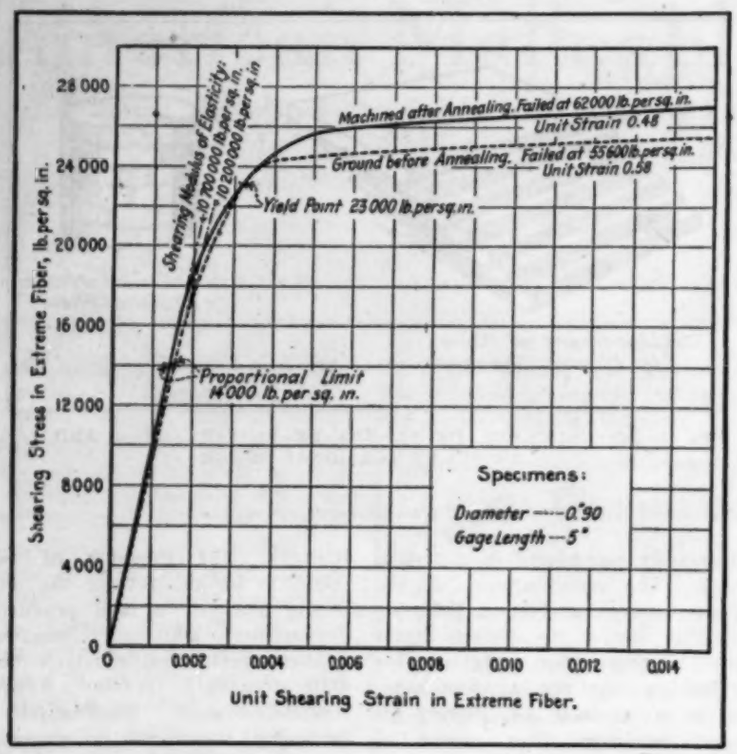


FIG. 3—STRESS STRAIN DIAGRAM OF MALLEABLE CAST IRON IN TORSION

tensity of stress then no longer varies uniformly from O at the neutral axis to a maximum at the top and bottom of the cross section, but there is a band of considerable width next to the upper and lower boundaries of the cross section in which the stress is fairly uniform. It is only below this area, where the stress is below the **proportional limit,** that the uniform decrease is observed.

The stress in the outer fibers is then not so great as would be calculated, since the permanent deformation of the specimen has transmitted some of the stress from the outer fiber to those further in. Therefore the modulus of rupture is a purely theoretical value not corresponding to any stress actually occurring in the specimen. It is merely the extreme fiber stress which would be produced at the breaking load if the material behaved as an elastic solid up to the breaking point.

Value Unexpectedly High

In the cross bending tests a load of 700 pounds at the center of a 12-inch span produced in a ½ x 1 inch beam a deflection of 0.076 inch at the proportional limit. Up to this point the deflection of the beam has been elastic hence the value of the modulus of elasticity can be readily calculated.

Letting W be the load = 700 pounds
X = deflection at center = .076 inches
L = span of beam = 12 inches
B = width of beam = 1 inch
D = depth of beam = ½ inch

$$E = \frac{W}{X} \cdot \frac{L^3}{4bd^3} = 31{,}800{,}000 + \text{pounds per square inch}$$

The value is unexpectedly high both as compared with figures for the tension and compression experiments, and as compared with the value for steel which is about 29,000,000 pounds per square inch. It is barely possible that the error is due to slight errors in the uniformity of D in the above formulas. For purposes of calculation a conservative value probably would be below 29,000,000 and possibly as low as 25,000,000 pounds per square inch to conform to the tensile results for the modulus of elasticity.

Shear and Torsion

Shear and torsion are the two remaining static stresses to be considered. They are closely related with one another and involve the sliding of the metal on itself, the slip taking place along a series of planes within the material. Shear involves a linear displacement while in torsion the displacement is angular. Rivets, bolts or pins are subject to shear when an attempt is made to slide the parts they hold together in a direction at right angles to the axis of the pin. It also is the shearing strength of a material which resists the punching or cutting in a die in a punch press. A knowledge of the shearing strength of malleable therefore is important both in the design of shackle pins and similar details, and in the selection of punch presses to be used in fabricating the product. Determinations made by driving a punch of known diameter through a plate of known thickness and measuring the force exerted in a testing machine have shown the shearing strength of malleable to be about 45,000 pounds per square inch. Similar experiments made by shearing off a cylindrical pin (double shear)

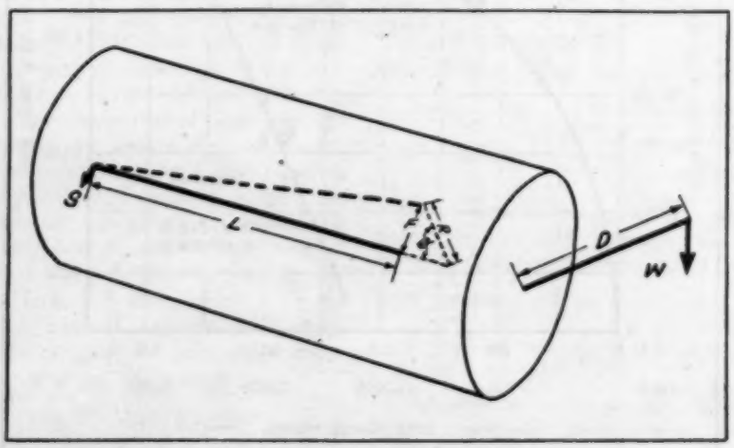
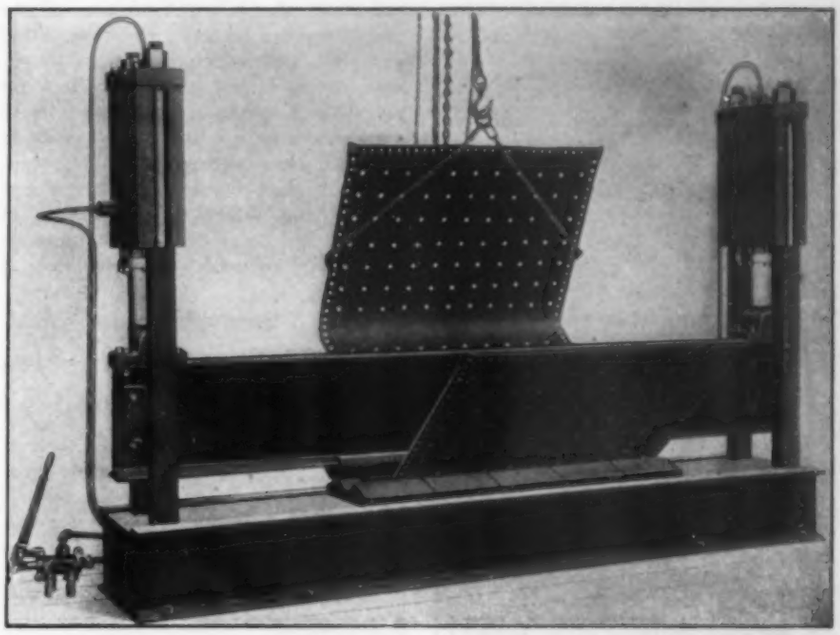


FIG. 4—DIAGRAM SHOWING FACTORS TO BE CONSIDERED IN DETERMINING TORSION STRESSES

gave values on the same metal of a little over 41,000 pounds per square inch. The first mentioned experiments probably are the more trustworthy. The experiments were made on metal having a probable tensile strength of 50,000 to 52,000 pounds per square inch. Therefore the shearing strength apparently is about 15 or 20 per cent less than the tensile strength of the product. In the case of elements in a design subject to twisting loads there is a tendency to shear by a sliding motion of the planes within a solid—but by a rotating action, one plane over another as shown in Fig. 2. Evidently the action is of exactly the same character in both cases. A twisting load is measured by the product of the force applied and its distance from the axis of rotation. This product is called the moment of the force about the axis of rotation or more briefly the torque and is measured usually in inch pounds. An inch pound is the moment of a force of 1 pound applied one inch from the axis of the specimen. When a shaft is twisted the metal is evidently deformed or strained more at the surface than at the center, the strain being proportional to the distance from the axis. As long as the metal obeys Hook's law of the proportionality of stress to strain—that is, as long as it is not stressed beyond the proportional limit—the stress also is proportional to the distance from the center and mathematical analysis will define the moment of torsional resistance of a section of given geometric form in terms of the dimensions of the cross section and of the shearing stress in the outside fiber.

(*Concluded on Page* 633)



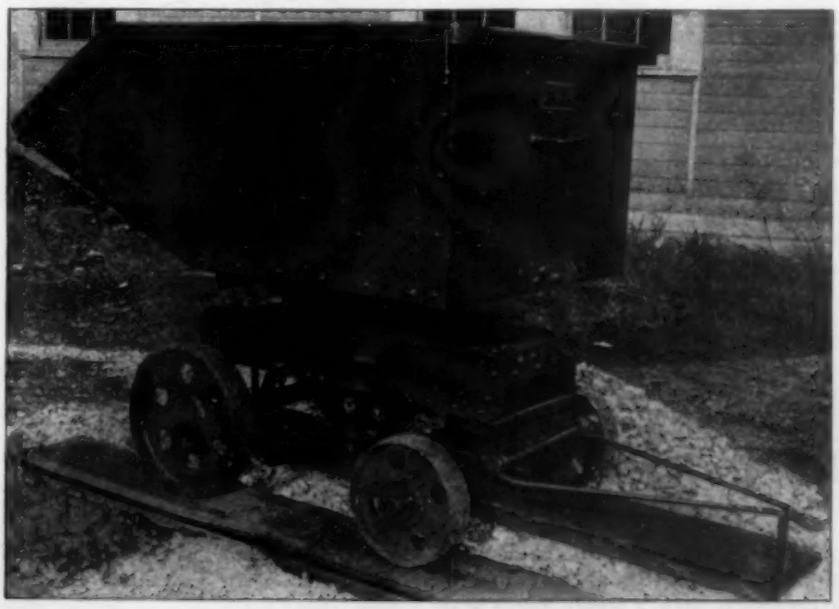
TWO RAMS MOUNTED ABOVE THE BEAM FURNISH THE OPERATING POWER

Plate Press Employs Sectional Dies

For use in shops doing plate or structural steel work or manufacturing boilers and tanks, the Houston, Stanwood & Gamble Co., Cincinnati, has developed a plate press of simple character. As shown by the accompanying illustration, the machine consists of a crossbeam connected to a ram at each end by swivel pin bearings to give flexibility and adjustment when the work is uneven. The frame is built of heavy uprights bolted through cylinders at the top and to a reinforced base casting at the bottom.

A feature of the machine is the placing of the dies. Both the upper and lower sets are sectional for convenience in handling and the upper ones are placed in position by sliding them toward the center over the beam flange. A hole in each section permits a bar to run through the die to lift it to the flange. The lower dies are aligned with the bed by side ribs which reinforce the bed. City water pressure, hydraulic water pressure or compressed air may be used as the operating power. The control lever for both the working and return stroke is located at the end of the machine and within easy reach of the operator.

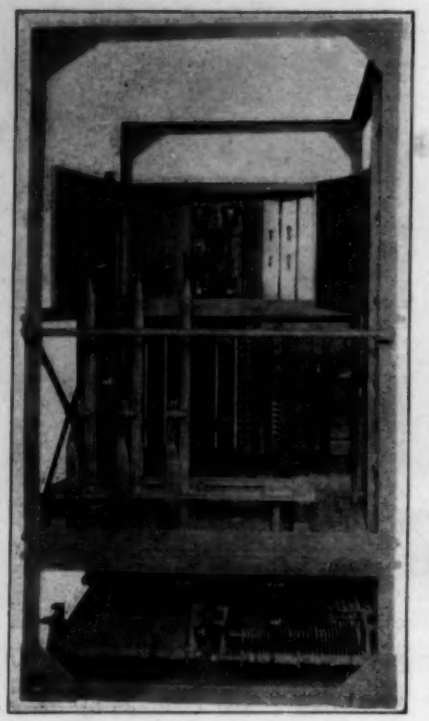
In the illustration, the machine is shown bending a wrapper sheet on a portable boiler. Depending upon the type of dies employed, the press may be used to bend or straighten work of variable sizes. To provide for uneven strains and stresses during the working stroke, the upper part of the machine has been made flexible.



FLAT TREADS ARE USED IN THIS SCOOP CAR TRAILER INSTEAD OF NARROW GAGE TRACK WHEELS. THE BODY OF THE CAR IS SHOWN IN THE UPRIGHT LOCKED POSITION

Builds Scoop Car Trailer with Flat Treads

Scoop car trailers with flat treads instead of narrow gage track wheels have recently been developed by the Eastern Car & Construction Co., New York. The body of the car is mounted



ALL DANGEROUS PARTS ARE PROTECTED WHEN THE DOORS ARE CLOSED

on a structural turntable which can be turned in any direction and permits dumping from either of the four sides. A swivel-type front axle, equipped with a machined cast iron, ball bearing, turntable permits the car to turn in a distance almost equal to its own length. In the accompanying illustration the body of the car is shown in the upright locked position. Among the operations for which the cars may be utilized are handling steel, chips, small forgings, and castings in machine shops. Coal, coke and cinders may be moved in boiler houses and foundries. Other uses for which the cars are still available are handling of sand, ashes, concrete, gravel and other loose materials. The capacity of the car is 27 cubic feet.

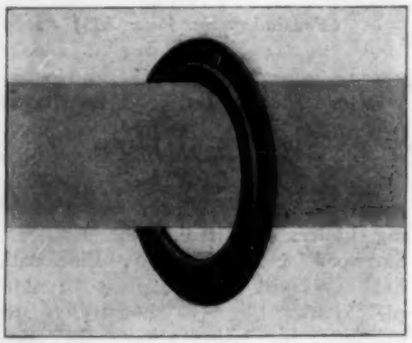
Develops Shaft Cleaner

For automatically keeping shafting clean and polished, the American Metal Products Co., Chicago, has developed a shafting cleaner which can be applied to and removed from the shaft readily. The device consists of a ring made from heavy gage nickel plate sheet zinc in four separate stampings, the joints being 90 degrees apart. Four wide zinc staples, easily clinched down with a pair of pliers when the ring is installed, lock the quadrants together.

As shown by the accompanying illustration, the enlarged portion of the ring forms a recess which is filled with felt and which serves to distribute drops of oil as they collect on the shaft. Constant forward and backward traveling of the ring maintains the shaft clean and polished. Development of the cleaner came as a result of the difficulty experienced in purchasing rings for this purpose when the company was building a new shop.

Electric Crane Cab Has Live Parts Covered

Adding protection to electric traveling crane operators, Pawling & Harnischfeger Co., Milwaukee, has built a new crane cab in which all current-carrying parts are enclosed. Space in the cab always is limited, thus exposed knife switches, magnetic control parts and resistors introduce considerable danger. Although in previous cages, the resistors have been provided for by a false bottom, the new cage carries all live parts concealed in the rear of the cab by means of doors, as shown in the accompanying illustration.



FELT IS PLACED IN THE ENLARGED PORTION OF THE RING

Control of the cab is obtained by three levers in the front which operate backward and forward thus providing the operator with an unobstructed view. Because of this cabinet feature the usual covers on the controllers are not needed. The handle for the knife switch extends through the cabinet and may be opened and closed from the outside. Wiring on the rear of the board is accessible by removing the enclosing panel at the rear.

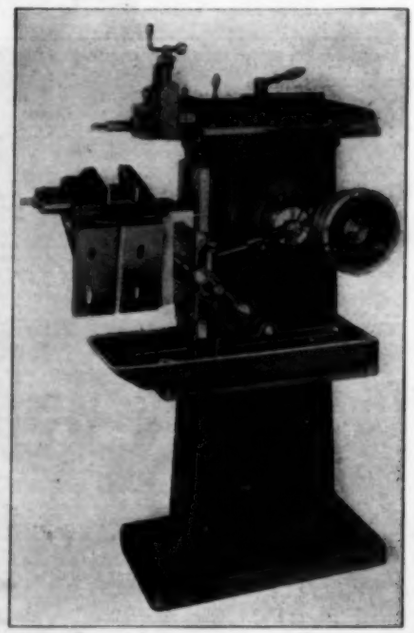
New Shaper Designed for Wide Work Range

To handle the general run of shaper work in the tool room, die shop and experimental shop, a sturdy 9-inch shaper recently has been developed by Carl Pletz & Sons, Cincinnati. A feature of its construction is that it may be used as a manufacturing tool on small work, being able to handle stock ordinarily handled by larger machines. The ram, which is wide and has a long bearing surface, can be set to any length stroke within its range, a graduated scale on the rocker arm showing the setting. The ramway is fitted with a taper gib adjustable for wear.

A swivel table of box section is provided and is bolted to the saddle, as shown in the accompanying illustration. Graduations in degrees permit settings to a fraction of a degree, a dowel pin locating the table at zero. The automatic feed is in either direction and may be varied as desired. Drive is furnished by a cone pulley which runs on a sleeve to take the belt pull from the pinion wheel. The pedestal as shown is provided for mounting the machine; however, it is not included as part of the regular equipment.

Engineers Issue Booklet

In a recent edition of a booklet entitled *Industry* published by Frank D. Chase, Inc., Chicago, the qualifications necessary when choosing employes are analyzed. How to get a foundry that fits is also treated at some length with illustrations of the main factors to be considered. Among the drawings are typical layouts and cross-sections of malleable and gray iron foundries, and different types of annealing ovens. Under a discussion of an ideal roof the publication list as requisites, watertightness, insulation, strength, durability, fireproof construction, economy and correct



THIS SMALL SHAPER MAY BE USED AS A PRODUCTION TOOL

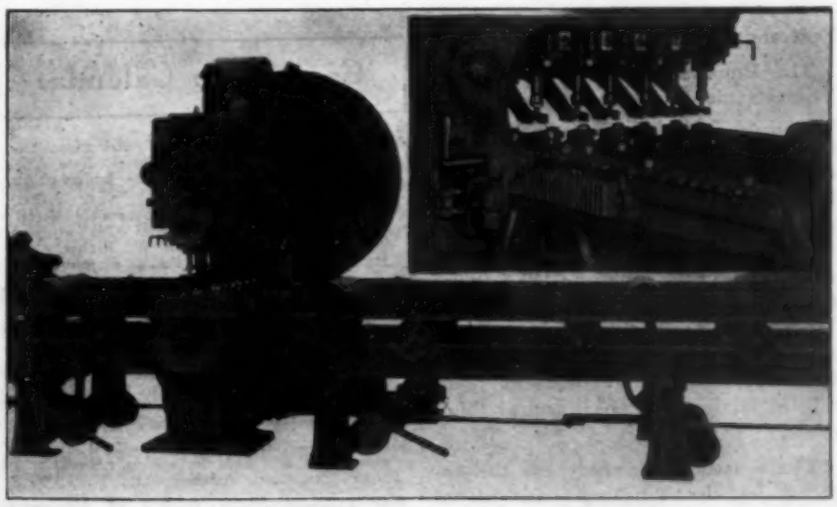
materials. Other features are a plea for better buildings, short stories, photography talks, an explanation of what constitutes an engineer's education and personal items which regard members of the organization.

Designs Spacing Table for Punch Work

A semiautomatic spacing table adaptable to either vertical open gap punches or multiple punches for handling plates, angles, beams, girders, channels or other structural shapes, recently has been manufactured by the Cleveland Punch & Shear Works Co., Cleveland. This machine, as shown in the accompanying illustration, has a 100-foot runway and a movable table of 50-foot capacity, although additional units may be added as needed. The table moves on rollers of large diameter and is propelled by a rack and pinion on each side. Adjustable tie castings provided with clamps for gripping various styles and kinds of material are located at each end of the table.

Punched material may be unloaded while new material is being located on the table and feed may be in either direction depending upon shop conditions. The rollers which support the material are counterbalanced by weights and have an adjustment of 24 inches from the top of the dies, thus permitting a 24-inch range in the size of work. These rollers are hand raised through a rack and gear segment and are locked in position by jaws on the extreme end of the runway. Springs located near the locking device act as a cushion when the punches force material down on the dies and also absorb the shock when the material is loaded.

Propelling power is supplied by a motor through double friction clutches controlled by push buttons. In feeding the work through the machine the large friction clutch lever, the handle of which is shown in the illustration, is thrown forward after which the operator releases the stop pin by the small handle above and to the left. As the table moves along the pin slides into a notch in the carriage acting to stop it. After the punching operation the carriage is started on its way by again releasing the stop pin. Feeding speed is at the rate of about 10 feet per minute.



FRONT VIEW OF NEW SPACING TABLE FOR PUNCH PRESSES. INSERT SHOWS THE PUNCHES AND OPERATING LEVERS

Designs Starting Switch for Plant Motors

For starting squirrel cage motors of 5 horsepower or over, without power line disturbances, the Cutler-Hammer Mfg. Co., Milwaukee, has devised an auto transformer constructed to meet the severe requirements of the industrial plant. This starter consists of two transformers, a commuting mechanism, a low voltage release and duplex overload relay, all enclosed in a sheet metal case with the operating lever outside, as shown in the accompanying illustration. Lifting of the cover which is hinged at the top exposes the interior parts. The bottom part is removable. The transformers and case are carried directly on the supporting brackets and may be mounted readily on the wall, switchboard, or any post or pedestal.

Operation of the motor is secured by moving the starter operating lever forward to the starting position and then backward to the running position where it is held in place by the low-voltage mechanism. Interlocks prevent moving the lever directly to the running position. Should the handle be released in the first position, it is returned to neutral by a spring.

Each of the two autotransformers is provided with three accessible taps

THE BOTTOM OF THIS SWITCH IS REMOVABLE WHILE THE FRONT HINGES UPWARD

which give 50, 65 and 80 per cent of full line voltage. For two and three-phase service, the transformers are connected in open delta. The commuting mechanism is placed at the bottom of the case and immersed in oil above the contacts to provide a double horizontal current break in each line. Sliding action of the contacts keeps them clean and breaks any film of oil which might form between them and produce arcing. The switch is of all metal construction.

Malleable Cast Iron

(*Concluded from Page* 631)

When the intensity of stress in the outside fiber passes the proportional limit a mathematical analysis of the load condition is no longer possible since the distribution of stress is no longer proportional to the distribution of strain. The modulus of rupture or the apparent stress in the extreme fiber when breaking occurs, is higher than the true value since these layers stressed above the proportional limit carry a stress more nearly equa. than their distance from the axis of rotation would indicate.

The condition is similar in character to that existing under cross bending stresses. Fig. 3 shows a stress strain diagram of the behavior of the material in torsion. The load is recorded in terms of intensity of shearing stress in pounds per square inch. This is calculated from the known dimensions of the specimen and the measured torque. The intensity of shearing strain is determined in terms of the ratio of the linear displacement of a point on the surface to the gage length. If within a gage length of 5 inches, a given load has produced a twist such that a point on

the surface has advanced .07 inch, the shearing strain is .07/5=.014. In other words the intensity of shearing strain is measured by the tangent of the angle through which an originally straight element of the cylindrical surface is displaced. Thus in Fig. 4, if W is the load and D its distance from the center, the torque is WD. S is the stress in the outer fiber, L the gage length of the specimen, F in linear measure is the displacement of the point by twisting under the torque WD from its original position, A. The intensity of the shearing strain is F/L, the value of F being determined from the known radius of the specimen R and the angle θ through which one end of the gage length has been twisted with respect to the other. It will be seen from Fig. 3 that the proportional limits and yield points are not very different from those in tension and compression. The shearing modulus of elasticity however is not the same as Young's modulus. The course of the curve during plastic deformation is not very instructive since it is considerably influenced by the testing speed. The preceding discussion summarizes the available information with regard to the resistance of malleable cast iron to the various well known forms of static loading.

Late News of the Societies

Notes on Past and Coming Meetings of National and Local Trade and Technical Organizations

AT A joint meeting and informal dinner held Feb. 25 at the Americus club, members of the Pittsburgh section of the American Society of Mechanical Engineers, S. B. Ely, chairman, and the mechanical section of the Engineers' Society of Western Pennsylvania, J. C. Hobbs, chairman, heard an address by E. C. Pierce, manager of the Pittsburgh office of the Baldwin Locomotive Works, Philadelphia. Mr. Pierce described in detail the building of a modern locomotive and presented motion pictures of his company's Philadelphia and Eddystone plants. Among the operations illustrated were: Casting cylinders from the making of the mold to the pouring of the iron, and cleaning of the castings; machining cylinders, including "laying out" for machining, boring, planing and drilling, and testing; construction of the boilers from the drilling, rolling and flanging of the plates to the assembling and testing stages. The erection of a locomotive for export was also shown and a description of the packing of a gasoline locomotive for shipment abroad was given.

Some interesting pictures were presented of locomotives being completed outside of the erecting shop and a running test of a locomotive. Electric and steam locomotives were described and the methods employed in weighing heavy locomotives were shown. The pictures featured the United States government's 7 and 14-inch guns, the former on a caterpillar and the latter on a railway mount.

* * *

Discusses Problems of Bureau

Dr. George K. Burgess, chief of the division of metallurgy, United States bureau of standards, Washington, presented a paper, "The Metallurgical Work of the United States Bureau of Standards," before the Cleveland chapter of the American Society for Steel Treating on Friday evening, Feb. 25. As guests of the society members of the Cleveland Engineering society, American Institute of Mining and Metallurgical Engineers, American Society of Mechanical Engineers, and Society of Automotive Engineers also attended the meeting.

In presenting his paper, which was illustrated with stereoptican slides, Dr. Burgess described the bureau of metallurgy, pointing out particularly the equipment and the range of problems which can be handled by the bureau. Although the talk was general in character, the speaker devoted considerable time to various types of steel to illustrate the nature of results which might be expected by different heat treatments.

* * *

Federation Is Being Considered

The Engineers' Society of Western Pennsylvania is taking a letter ballot among its members on the adoption of the proposed constitution of the Associated Engineering Societies of Pittsburgh. This new body is to be composed of the Engineers' Society of Western Pennsylvania, the Pittsburgh sections of the American Society of Civil Engineers, American Society of Mechanical Engineers, American Institute of Electrical Engineers, American Chemical society and American Institute of Mining and Metallurgical Engineers.

The constitution already has the approval of the Pittsburgh sections of the American Society of Civil Engineers, American Society of Mechanical Engineers and the American Institute of Electrical Engineers and the board of directors of the Engineers Society of Western Pennsylvania.

* * *

New York Association Elects.

New officers have been elected by the Metropolitan Brass Founders' association, as follows: President, F. H. Landolt, Penn Brass & Bronze Works, Brooklyn; vice president, John Hamilton, R. Hamilton & Sons, Inc., Brooklyn; ton & Sons, Inc., Brooklyn; secretary secretary and treasurer, William E. Paulson, Thos. Paulson & Son, Inc., Brooklyn. Thomas Harper, Thos. Harper, New York; Joseph Bechtold, New York Brass Foundry, New York; and Thomas Williams, E. A. Williams & Son, Jersey City, were elected members of the executive committee. Speakers on foundry practice and on general trade and business affairs are provided for each meeting.

Convention Calendar

April 20-21—National Metal Trades association. Annual convention, Astor hotel, New York. Homer D. Sayre, Peoples Gas building, Chicago, is secretary.

April 21-23—American Electrochemical society. Spring meeting at the Hotel Chalfonte, Atlantic City, N. J. Joseph W. Richards, Lehigh university, Lehigh, Pa., is secretary.

May 5-6—British Iron and Steel institute. Spring meeting at the Institution of Civil Engineers, Great George street, London, S. W. 1. The secretary is George C. Lloyd, 28 Victoria street, London, S. W. 1.

May 9-10-11—American Association of Engineers. Annual convention to be held in Buffalo. National association headquarters, 63 East Adams street, Chicago.

May 19-20—National Machine Tool Builders' association will hold its spring convention at Hotel Traymore, Atlantic City, N. J

May 23-26—American Society of Mechanical Engineers. Spring meeting, Congress hotel, Chicago. Calvin W. Rice, 29 W. Thirty-ninth street, New York, is secretary.

Freight and Wage Cuts Essential

John A. Topping Analyzes Prospects for Stabilization of Iron and Steel Market and Restoration of Business Activity from Viewpoint of Independent Producer —Labor Reductions Justified by Changes in Living Cost

PROBLEMS of readjustment in the iron and steel industry from the standpoint of the independent producer are set forth in a very definite fashion by John A. Topping, chairman of the board of directors of the Republic Iron & Steel Co. in an interview appearing in the *Magazine of Wall Street*. Mr. Topping points out the necessity of lower costs of production and the extent to which wages and freight rates are important as basic factors. He especially lays emphasis upon the factor of freight rates and the conformation of the latter to the changed conditions of the present time, as an underlying essential to the stabilization of business. Mr. Topping's interview which is in the form of question and answers, follows:

"What are the prospects for iron and steel, and do you think present adjustments have gone far enough to establish a stable basis for values, if not, what other adjustments are needed to bring about trade recovery?"

"Slow recovery for iron and steel is under way, stocks are being reduced and demand is accumulating, because buying is at a standstill in both the domestic and foreign markets, but this big country cannot long maintain itself with purchases or iron and steel on its present restricted basis," said Mr. Topping. "Steel prices today, are on a bargain-counter basis, and I believe demand will be greatly stimulated when all obstacles to reconstruction are removed, the most important being, from a world-trade standpoint, the settlement of the German war indemnity, the other, from a domestic trade standpoint, being of equal importance, viz:- readjusting.

"Transportation from war to peace basis as to the war indemnity problem, the coming conference of the powers promises something definite, and let us hope that some practical and mutually satisfactory basis will soon be established, which will enable the world to get back to work.

"The railway problem is a practical one of reducing the cost of conducting transportation, to more nearly the prewar level, and to accomplish this, the railways must have not only the co-operation of labor, but of all other interests. The general liquidation which has taken place in commodity values has been a substantial help in reducing costs of conducting transportation—this being notable true of coal, iron and steel ably true of coal, iron and steel supplies, labor however the largest single item, has not responded, but should do so in its own interest, otherwise, traffic will continue to shrink in volume, and unemployment will be emphasized. Aside from reasons of employment, labor should make its contribution to cheaper cost of transportation, because labor rates during the war, advanced out of proportion to the increased cost of living."

"Then, Mr. Topping, you think labor reductions have been fair and also justified by changes in living costs?"

"Yes, for the reason that labor rates, since 1914, were advanced 165 per cent, whereas the industrial conference board reports, for the same period, cost of living advanced 104.5 per cent. On the other hand, the United States bureau of labor shows, that January, 1921 living costs, measured by wholesale prices, are down 35 per cent, and by the retail standards 14 per cent, but with retail prices rapidly shrinking.

"Another comparison is equally convincing, when January, 1921 labor rates, now in effect at most steel works of this country are considered; that is to say, the adjusted labor scale of February, 1921 is about 90 per cent above 1914 rates, whereas living costs since 1914, have increased 77 per cent."

"In what way do you think reductions in freight rates will help business?" was asked.

"By stimulating business confidence, because present rates are war rates, and everyone knows they cannot be maintained, and buyers are withholding purchases in anticipation of readjustments, which reductions railroad executives have publicly admitted must be made to stimulate traffic. The importance of iron and steel to railway traffic, is not fully appreciated by the public, but its importance is suggested when it is considered that it requires six tons of raw material movement inbound, to produce one ton of outbound finished product, and therefore, the present war schedule of freight rates, with advances on the different iron and steel commodities, which range from 90 per cent on long hauls to 300 per cent on some short hauls, is not only restricting traffic, but adversely affecting railway revenues and working a great injury to the great army of workers in the independent steel trade, furthermore, anything that will help railway revenues, will stimulate steel demand."

"Have war freight rates adversely affected your export trade?"

"Not heretofore, for reasons generally understood, but freight rates below domestic rates, will be necessary when European production begins in earnest, as we will not only have to compete with cheaper labor, but a depreciated mark, franc or shilling, and these disadvantages will weigh heavily against us without railway freight co-operation."

"What about the political situation? Don't you think the change in administration will be helpful?"

"There can be no question about the business public's confidence in President-elect Harding, and while the problems confronting the new administration are big ones, the ability within the party is big enough for their solution. Business, at least, feels that it is in the hands of its friends, and instead of having governmental opposition, will have hereafter, governmental co-operation. I therefore, feel confident, as previously stated, that while we are not 'out of the woods,' yet we can see daylight; and are making progress towards improvement, and with normal crops in prospect, this improvement should be accelerated later on."

Cut Wages 20 Per Cent

Pittsburgh, March 1.—Effective March 1 the Jones & Laughlin Steel Co., announced a reduction in the rate of pay to common labor from 46 to 37 cents, It is understood that adjustments will be made in the pay of all other wage and tonnage employes effective at the same time but no changes in hours and working conditions are contemplated. The cut averages about 20 per cent. This new rate for common labor is approximately the same as already has been established by some of the other independent steel companies. In normal times the Jones & Laughlin Steel Co., employs about 25,000 men, but at present a small percentage are affected.

Great Wage Change Outlined

Statistics Issued by Bureau of Labor Show Workmen Were Paid in 1920 Seven Times More Than in 1840—Peak Reached 10 Years After Civil War, Two Years Following World War—Panorama Represents Many Trades

WASHINGTON, March 1.—Labor in 1920 was being paid slightly more than seven times the average rate in 1840 more than four times the peak of the Civil war period and approximately three times the average for 1900, an investigation by the bureau of labor statistics into wages paid in the past 80 years reveals. The pre-war year of 1913 was taken as the basis for comparison, and equals 100 in the accompanying table. Thus, with 1913 equaling 100, the index number for 1840 is 33, for 1850 it is 35. By 1860 it had risen to 39, in 1870 it was 67, this 10 year period including the Civil war, and by 1880 it had fallen back to 60. By 1890 it had soared to 69, and at the beginning of the present century was 73. The following 10 years showed a gain of 20 points to 93, while from 1910 to 1920 the increase was from 93 to 234. The Civil war period shows that wages rose for eight years following the termination of the conflict. As 1920 now appears to have been the peak, this period after the recent war was only one-fourth as long. From the peak following the Civil war, to the beginning of the upturn seven years elapsed, and not until 1889, or 25 years following the surrender of Lee did the wage level reach the high point in the post-civil war period. The rise that set in in 1880 has been steady up to and including 1920. In compiling these index numbers it is explained that as many occupations as possible were taken into consideration, to present a fair panorama of the wage situation during the various periods.

A comparison of trades from 1840 to 1920, is equally enlightening. Machinists in Maryland, for example, were getting 16.5 cents an hour in 1855, 30 cents in 1865 and 75 cents in 1920. Molders in the same state were getting 18.3 cents an hour in 1855, 25.3 cents in 1865 and 93.8 cents in 1920, according to the compiled figures.

Comparison of Wages by Occupations

Occupation	State	Year	Wages per hour Cents	Year	Wages per hour Cents	Year	Wages per hour Cents
Compositors	Connecticut	1842	15	1865	30	1920	72.9
"	New York	1851	15	1865	25	1920	122.2
Carpenters	Connecticut	1840	16.2	1865	27.5	1920	100
Painters	Maryland	1840	12.5	1865	25	1920	90
Carpenters	Massachusetts	1854	13.3	1865	22.5	1920	100
Plumbers	New Jersey	1850	15	1865	25	1920	112.5
Carpenters	New York	1843	15	1865	32.5	1920	112.5
Bricklayers	"	1851	17.5	1865	32.5	1920	125
Carpenters	Pennsylvania	1849	12.5	1865	25	1920	112.5
Plasterers	"	1840	15	1865	25	1920	125
Slasher tenders	Massachusetts	1855	6.2	1865	12.5	1920	70.6
Speeders (F)	"	1842	3.8	1865	5	1920	51.4
Spinners frame (F)	"	1842	3.5	1865	5.2	1920	50.6
Weavers (F)	"	1842	4.7	1865	5.4	1920	54.8
Spinners frame (F)	New York	1853	3.5	1865	4.2	1920	47.4
Beamsters (leather)	Massachusetts	1857	9.1	1865	21.7	1919	62.5
Machinists	Maryland	1855	16.5	1865	30	1920	75
Molders	"	1855	18.3	1865	25.3	1920	93.8
Machinists	Massachusetts	1849	15.8	1865	23.4	1920	80
Molders	"	1849	15.6	1865	22.9	1920	90
Blacksmiths	New York	1846	12.5	1865	27.5	1920	80
Machinists	"	1846	15	1865	25	1920	80
Blacksmiths	Pennsylvania	1855	15	1865	30	1920	110
Machinists	"	1853	16.7	1865	27.6	1920	80
Conductors, passenger	"	1840	21.1	1865	38.3	1919	96.2
Engineers, locomotive	"	1840	21.4	1865	29.9	1919	92.4

All occupations represent males except those marked F.

Index Numbers of Wages Per Hour

Year	Index number	Year	Index number	Year	Index number	Year	Index number
1840	33	1860	39	1880	60	1900	73
1841	34	1861	40	1881	62	1901	74
1842	33	1862	41	1882	63	1902	77
1843	33	1863	44	1883	64	1903	80
1844	32	1864	50	1884	64	1904	80
1845	33	1865	58	1885	64	1905	82
1846	34	1866	61	1886	64	1906	85
1847	34	1867	63	1887	67	1907	89
1848	35	1868	65	1888	67	1908	89
1849	36	1869	66	1889	68	1909	90
1850	35	1870	67	1890	69	1910	93
1851	34	1871	68	1891	69	1911	95
1852	35	1872	69	1892	69	1912	97
1853	35	1873	69	1893	69	1913	100
1854	37	1874	67	1894	67	1914	102
1855	38	1875	67	1895	68	1915	103
1856	39	1876	64	1896	69	1916	111
1857	40	1877	61	1897	69	1917	128
1858	39	1878	60	1898	69	1918	162
1859	39	1879	59	1899	70	1919	(a)184
						1920	(b)234

(a) This index number applies to the spring of 1919. Wage rates advanced during the year.

(b) This index number applies to the summer of 1920, and probably represents the wage peak of the year.

Wages in 1913 represent 100.

Drew Replies to Darrow

"That trade unions cannot exist without the closed shop is belied by the fact that they do exist and have always existed, and only a small percentage of the unions insist upon the closed shop, although unionism itself has been steadily increasing in numbers and powers," said Walter Drew, counsel for the National Erectors' association in addressing the City club, Cleveland, Feb. 26. A week previous the club, composed of business men, heard Clarence Darrow who spoke in favor of trade unionism and declared that the open shop "does not exist."

"The attainment of the closed shop is the beginning of the downward movement for the trade unions," continued Mr. Drew. "Giving less and demanding more and ever reaching out for more, the closed shop union finally finds itself arrayed against society itself."

Adopts Open Shop

William Cramp & Sons Ship & Engine Building Co. has discontinued the agreement made with the metal trades department of the American Federation of Labor which expired Dec. 31,

and hereafter wi'l conduct its plants as open shops. J. H. Mull, president and general manager of the company, stated that he refused to renew the agreement because the members of the trade unions broke several. The men broke the 1920 agreement by going out on strike Dec. 22, about 10 per cent of the total walking out, in anticipation of a discontinuance of the agreement. The company has filled the vacancies with more responsible men, and has notified its employes that hereafter it will maintain direct relations with them instead of having to deal, as provided in the former agreement, through representatives of the trade unions.

Unions Raise Million to Gain "Bill of Rights"

Washington, March 1.—Approximately $1,000,000 will be placed in the war chest of the American Federation of Labor, to be used for publicity and propaganda work in connection with labor's resistance to the open shop movement and in furtherance of its federal legislative program, if plans adopted at the recent union labor conference here are carried out. A large part of this money will be devoted to putting before the public labor's attitude in regard to the railroads and the steel industry. Labor officials at the recent conference were practically unanimous in the belief that the steel industry is the bulwark of the open shop, and that if labor is to retain the ground it has gained in the war it must not only smash this bulwark but also must successfully combat the railroads in their present attack on the so-called national agreements.

In defining its "bill of rights" the union labor conference took exception to two Supreme Court decisions, that in the Hitchman Coal & Coke case, which prohibits unions from attempting to organize in plants where employes have a nonunion agreement, and the other in respect to the secondary boycott.

The conference urged a two-year ban on all immigration, the election of federal judges, the restoration of the federal employment service, a specific exemption of labor from the Clayton act, abandonment of the injunction in labor disputes, repeal of various state industrial court acts, and a probe by the federal government of industrial detective agencies.

Personnel Service Cut as "Fancy Stuff"

The recent tendency in all basic industry toward curtailed production entailing shut downs and wage reductions, according to Edward D. Jackson, chief mediator of the bureau of mediation and arbitration of the state industrial commission of New York has produced a labor surplus and a chaotic and unstable labor market. He says:

"At present, there seems to be a marked movement by management toward the curtailment, and even, elimination of what is commonly known as personnel administration. One large corporation which had formerly set aside $100,000 yearly for such work, maintaining 40 people on the personnel staff, has practically eliminated the budget and reduced the personnel department to five. Several other corporations have moderated their efforts, feeling that they should cut down the 'fancy stuff' first.

"It will be unfortunate if the movement to conserve and develop the human factors is thrust aside as unnecessary overhead. It seems unwise that the great progress made in the direction of improved industrial relations should be brought to a halt at the first sign of industrial depression. Skillful management of the human problems involved is probably the only thing which can save the community from the worst dangers of an unemployment period."

Steel Works Planned in Texas Merger

L. P. Featherstone and a number of associates plan to organize what is to be called the Texas-Louisiana Steel Corp. with headquarters at Longview, Tex., and with a capital of $10,000,000. The new company will take over the iron and manganese ore beds, coal mines and other holdings of the Texas Steel Co. and the Louisiana Steel Co. and merge them into one corporation and management. Plans for the proposed merger and development operations include the mining of iron ore, manganese and coal, the manufacture of coke, the building of a blast furnace with a daily capacity of 500 tons and the construction of an iron and steel plant. Mr. Featherstone said the iron ore holdings, test pitted and analyzed, measure 58,284,380 tons, of 52 per cent average metallic content. The manganese deposit has not yet been so accurately measured, but is estimated at 2,300,000 tons. The coking coal and limestone have been contracted for, it was announced by Mr. Featherstone. It is proposed to erect the plant in the heart of the ore beds 40 miles north of Longview and to produce pig iron, steel cotton ties, concrete bars, and other forms of steel.

Financing Exports

To Be Discussed at National Foreign Trade Convention

American foreign trade and its present problems will be the theme of the eighth annual convention of the National Foreign Trade council, which will be held in Cleveland May 4 to 7. Attention will be especially concentrated upon the financial features of foreign trade. The tentative program announced for the convention contains the following subjects:

"American Trade and Its Influence on Foreign Exchange," "The Causes of Inflation and Its Effect on the Exchanges," "Influence of American Investment Abroad," "The Settlement of Our Export Balance," "Frozen Credits, What They Are and How To Thaw Them," "The Effect of Double Taxation on Foreign rade," "Foreign News and Foreign Trade," "Discrimination Against American Trade," "A Reasonable American Policy for Foreign Loans," "Adequate Foreign Service Essential to Our Foreign Trade," "American Maritime Policy," "Marine Insurance," "Inland Transportation for Foreign Trade," and "Return Cargoes."

These topics will be divided among four sessions in three days and will be followed by group sessions. At the fifth general session Saturday, May 7, group reports will be submitted and the final declaration of the convention will be made. The annual banquet will be held Friday night.

To Operate Steel Company

The Discol Steel Co. has purchased a large acreage of land on Racoon mountain near Gadsden, Ala., and plans are reported to be under way for immediate developments. The company was recently organized to operate in the vicinity of the Tennessee river and in the section known as Raccoon mountain. New York and Chicago interests are interested in the project. The developments will be made north of Gunterville, and will include both mining and manufacturing. C. H. Ward of Chicago, is the head of the group that has organized the Discol Steel Co. In addition to this group there are others planning extensive developments in northern Alabama, including the Cherokee Coal & Iron Co., and the White Iron & Coal Co.

The American Radiator Co., Buffalo, N. Y., recently received a federal permit to construct a cable way across the Alleghey river at Olean, N. Y., 255 miles above the mouth of the river.

Sales Tax Program Is Opposed

National Industrial Conference Board Issues Statement Following Tax Conference at Which New York Bankers Attack Committee's Report—Stocks Practically "Exempt", Iron and Steel Taxed on Seven Turnovers, Congress Told

RECENT developments in the national tax situation have served to clarify the position of the iron and steel industry in respect to its attitude on a general sales tax, or at least that part of the industry represented in the National Industrial Conference board and the Chamber of Commerce of the United States. The conference board has gone on record as opposed to such a tax, while a majority of the members of the chambers have expressed themselves similarly in a referendum. The subject now is receiving considerable attention in congress in connection with discussions as to the general taxation policies to be pursued by the government. Bitter criticism has been voiced in the house against a group of New York bankers who have advocated the sales or turnover tax. Representative James A. Freer, Wisconsin, recently pointed out that whereas such a tax would be imposed in seven successive stages or turnovers in the iron and steel industry, nine in the case of cotton and eight in leather, stocks and bonds would be practically unaffected.

The advocates of the sales tax were strongly represented at the third national tax conference held recently in New York. As chairman of this conference, Fayette R. Plumb, president of Fayette R. Plum, Inc., found himself in the difficult position of presiding over a discussion of the work of his own committee, for he also was chairman of the enlarged tax committee of the industrial conference board. The committee's report was attacked by the group of New York bankers, and some others; one group criticising the committee as theorists and another on the ground that the members were themselves "beneficiaries" of the existing system of profit taxation.

Since the tax conference was held, the National Industrial Conference board has issued a statement, further defining its position, as its tax committee believes its conclusions have been misunderstood or misinterpreted. The board explains that the enlarged committee was organized nearly a year ago at a time when a strong movement was under way to create sentiment for the sales tax. It goes on to say:

"The committee conducted a searching inquiry into the whole field of sales taxes. Its consultations with experts and the hearings granted to the proponents of that scheme were supplemented by the committee's own researches. The conclusion was reached that the claims for this form of taxation are extravagant and based on unverifiable assumptions, its yield uncertain and its final incidence likely to be even more inequitable than that of the present system. In short, the committee found that a general sales tax, or turnover tax, in any of the forms in which it has been proposed, is unsuited to the present situation in the United States. The report of the committee recites at length the reasons for this conclusion.

"Thus it came about that the report of the enlarged tax committee of the National Industrial Conference board was the first sharp setback that the sales tax propaganda had received. Under such circumstances it was certain that the report would be assailed, and if there had been any doubt of it, it was removed by developments at the second national industrial tax conference, when the committee's tentative report was heard and discussed. When the third national industrial tax conference assembled to hear the committee's completed report the sales tax group was present and organized to carry on a determined struggle for their theory. The two criticisms to which the committee has taken particular exception arose in the course of the ensuing debate.

"As to the statement that the committee 'have been led by the nose' by theorists, especially their advisers and that their report was framed by the advisors rather than by the business men on the committee, it should be said:

"1.—That the services of the advisors were voluntary. The report was written entirely by the members of the committee and its secretary. No advisor wrote a single word of it.

"2.—The committee did not close their minds as the advocates of a general sales tax seem to think that they should have done, to either the theory or the practical knowledge of the application of taxation possessed by such eminent authorities as are their advisers, any more than they closed their minds to the arguments repeatedly presented in conferences with the advocates of one form or other of a general sales tax.

"As to the statement that 'the evidence in the report itself shows that both the conclusion and report are primarily that of proponents, apologists, and beneficiaries of profits taxation' it should be said that four members of the committee including the chairman, are heads of corporations engaged in manufacturing. If the theories of the advocates of a general turnover tax are sound and their statements correct, these manufacturers would be among the chief beneficiaries of that form of taxation, excepting those who are now paying special excise taxes which might be replaced by a general sales tax. Indeed, one of the manufacturers on the committee stated that if the figures used by sales tax advocates are correct, his corporation would have an advantage over its competitors of more than $200,000 annually.

"Two other members of the committee are engaged in an industry which is frequently referred to as a likely subject for additional excise taxes. The other members of the committee who are engaged in transportation, or in the production of raw materials including agriculture, can hardly be said to be the 'beneficiaries of profits taxation.' The active propagandists for a turnover tax are a jewelry merchant, Mr. Rothchild, a commission merchant, Mr. Lard, an investment banker, Mr. Basche, and certain of those who now pay excise taxes. The turnover tax on goods, wares, and merchandise, is proposed to take the place of all or most of the present excise taxes, such as that on jewelry, and is not to apply to sales by commission houses, but only to the commissions on such sales, and moreover is not to apply to the sales of securities. The committee does not question the right of these interests to propagandize for a form of taxation which will relieve them, but felt that their own committee should look at the matter from the standpoint of the public interest. These facts are surely sufficient to free the tax committee from any charge of subserviency to theorists, or of conducting a propaganda in their own interests. They lend, moreover, a new interest and force to the committee's conclusions.

"The committee stands squarely on its recommendation that to whatever extent it is necessary to levy sales taxes, it is preferable for congress to impose the tax on commodities selected after investigation of the effect of the tax on each commodity rather than to impose a general tax on sales of all commodities either at retail or as a turnover tax. The committee also believes that such sales taxes should be levied on each commodity only once, preferably whenever its sale narrows down to a comparatively small number of points. It neither recommends the retention nor the abolition of the present consumption and excise taxes, but lays down the principle that such taxes should be limited to a specified list of commodities;

"(a) which are not absolute necessities of life, but are in such strong demand that the tax would normally be shifted without seriously affecting their distribution;

"(b) the tax on which would be capable of definite determination and easy supervision and collection.

"The committee recommends that such additional revenue as may be re-

quired to replace the revenue lost by the repeal of the excess profits tax and reduction of surtaxes on personal income, and which cannot be replaced from the increases in the other taxes recommended by the committee or from the increases in the customs duties, could be produced from such sales taxes. The recommendation of the committee makes it clear that it looks upon such taxes as the last resort, provided it is not possible to reduce the revenue requirements, or to raise from customs duties the amount required in excess of what the other recommendations of the committee could produce."

Furnaceman Sees Bright Side of Iron Drop

The bright side of the drastic deflation of pig iron prices is pointed out by President Leonard Peckitt, of the Empire Steel & Iron Co., Catasauqua, Pa., in his annual report to stockholders. Since business could not be maintained or development carried forward along sound economic lines until the inflated level of prices had undergone reductions, he believes it is fortunate that the radical change has come in the pig iron industry in so short a space of time.

"With the establishment of a feeling of confidence that prices have been placed on a basis which may be regarded as satisfactory, business in volume will be offered and a more permananent prosperity ensue," says Mr. Peckitt. In his opinion further reductions in the prices of materials and labor going into pig iron will be necessary in order to produce at a profit on the new levels now being established.

Although the gross income of the company in 1920 exceeded that for the preceding year by nearly $200,000, losses occasioned by inventory shrinkage and sales of government bonds brought the gain in net income down to $42,000 over 1919. According to the annual report of the company the gross income in 1920 amounted to $1,051,358 against $851,789 in 1919.

The company's production of pig iron during the year declined, being 138,989 tons compared with 154,962 tons in 1919. The reduction it is explained by President Leonard Peckitt was largely due to the rebuilding of the Crane furnace. Ore production increased, the total output being 245,802 tons against 234,326 tons the preceding year. Ore mine production continued steadily until December.

The company charged off $123,350 on account of adjusted inventory and the loss on government bonds sold amounted to $26,887. The tax reserve reported for 1920 was $75,000 against $58,000 in the preceding year. The dividend of 6 per cent on preferred stock was paid during the year. The comparative income account follows:

	1921	1920
Gross income	$1,051,358	$851,789
Deductions:		
Depletion and depreciation	357,840	366,260
Bond interest	22,220	23,420
Loss on sale of U. S. Bonds	26,887	....
Total	406,948	289,680
Net earnings	644,410	462,108
Inventory Adjustment	123,350	....
Tax reserve	75,000	58,000
Net profits	446,060	404,108
Dividends	150,000	150,000
Net income	298,060	254,108

The balance sheet of the company shows an increase in the working capital of $458,000 to a total of $2,426,323. This gain is accounted for by the gain of $673,000 to a total of $1,941,120 in the value of inventories over 1919. The net working capital reported as of Dec. 31, 1920 was $1,180,000 against $1,483,000 one year before. Cash was $195,279 compared with $212,696 in 1919.

"The slackening of demand and the drastic drop of prices which came in the final months of the year were accompanied by blowing out of furnaces unable to effect a proportionate reduction in cost, without which the piling of iron could only result in substantial loss." says President Peckitt. "With the exception of one furnace at Catasauqua, operating of all the furnaces of your company was discontinued in December and the ore mines placed on half time."

Follansbee Sells Bonds

The Follansbee Bros. Co., Pittsburgh, is selling $4,000,000 in first mortgage 20-year 7 per cent sinking fund gold bonds dated March 1, 1921 through investment bankers. The proceeds of the bonds together with an additional $1,000,000 realized from par value common stock will be used to retire an issue of $1,500,000 of 7 per cent cumulative preferred stock, to complete the company's sheet and tin plate plant at Toronto, O., and provide additional working capital.

Financial Crop Ends

THE Wickwire Spencer Steel Corp., Worcester, Mass., has announced an increase in its capital stock from $9,150,000 to $11,650,000 through issuance of 25,000 additional shares of 8 per cent, first preferred stock.

* * *

The Kellogg Structural Steel Co., Buffalo, has increased its capital stock from $100,000 to $300,000 and the Jamestown Die & Tool Corp., Buffalo has raised from $100,000 to $500,000.

* * *

The Groton Iron Works, Groton, Conn., which recently emerged from a receivership, has brought suit against the United States shipping board and Emergency Fleet Corp. for $13,000,000 to recover for alleged losses sustained by the suspension of work on the part of the latter which it is claimed was responsible for the receivership.

* * *

The Gillette Safety Razor Co., Boston, annual report for the fiscal year ended Dec. 31, 1920, shows net earnings, including subsidiaries, without reserve for taxes, of $6,803,407, compared with $6,025,350 in 1919. $5,252,136 in 1918, and $4,603,782 in 1917.

* * *

Inventories of the Colorado Fuel & Iron Co., as of Dec. 31, 1920 were $6,635,374 compared with $5,306,721 one year before. This was an increase of $328,653. The company reports that the gain is due to higher valuation since the physical volume is lower than one year ago.

* * *

The Parret Tractor Co., Chicago Heights, Ill., and the Hicks Tractor Co., Milwaukee, Wis., have joined in a merger to be known as the Hicks-Parret Tractor Co. with a capitalization of $3,500,000. Vincent Bendix, former president of the Parrett Co., will head the new organization.

* * *

The Industrial Trust Co., Providence, R. I., has been appointed permanent receiver of the American Wringer Co., Woonsocket, R. I. It is empowered to operate the plant and adjust claims against the company. The company was incorporated in 1891 by a consolidation of several other concerns and has a capital stock of $1,750,000.

* * *

Frederick A. Rumpf, Stamford, Conn., and G. E. Lilley, Philadelphia, have been appointed by the Superior court of Connecticut coreceivers of the Remington Oil Engine Co., Stamford, builder of engines. Its counsel says that it is solvent, but that the receivership is desirable to keep creditors from embarrassing the company during the present business depression.

* * *

At a special meeting of the stockholders of the Allied Chemical & Dye Corp., called for March 7 directors will propose an increase in the capital stock by $60,000,000 additional preferred and 1,000,000 shares of common, and in increase in the capitalization correspondingly. This will mean an increase in the capital from $48,013,675 to $113,043,675.

* * *

Surplus earnings of the Pettibone Mulliken Co. for 1920 amounted to $627,673 after reserves for depreciation and federal taxes. After payment of both the common and preferred dividends and setting aside $214,000 for the first preferred sinking fund there was added to profit and loss surplus $332,666, which brought that item up to $1,547,720.

Agree on Merger

Three Canadian Companies Finally Decide to Combine

Toronto, Ont., Feb. 28.—Directorate of the Dominion Steel Corp., Nova Scotia Steel & Coal Co., and Halifax Shipyards, Ltd., have arrived at an agreement for a merger of these companies under the name of the British Empire Steel Corp., Ltd., it is officially announced. The proposed amalgamation is on a much smaller scale than the original proposition which involved nine or 10 companies. The first plan met with some opposition from several directors of the Dominion Steel Corp., who demanded fuller information concerning some of the companies included than had been furnished. The difficulty of raising finances in England, largely due to the discount on British funds, caused the abandonment of the plan. The merger of the Dominion Steel and the Nova Scotia Steel & Coal companies has been discussed at intervals for several years, owing to the proximity of plants, and coal and iron ore deposits of the companies. The movement for a merger gained strength about a year ago when access of the Nova Scotia company to some of its coal areas became difficult owing to the location of workings of the Dominion corporation. Considerations of reduced cost of operations were supplemented by the argument that a merger would place the companies in a better position to meet foreign competition. The inclusion of Halifax Shipyards Ltd., has caused much criticism in view of the decline of activity in the shipbuilding industry.

The plant of the Dyrob Steel Co., at Orilla, Ont., organized last October now is in operation. Its products include tools and domestic cutlery. It is claimed that a new process is in use which materially reduces costs. The tools are made of low carbon steel and then transformed into high carbon products. The company proposes to build a new plant in the spring at a cost of approximately $50,000.

Unprofitable Year Shown

According to the annual report of the Canada Foundries & Forgings Co., operations in 1920 were unprofitable, the surplus being reduced by $80,948 to $1,204,273 as of Dec. 31, 1920. The report points out that towards the end of the year all orders and contracts for automobile forgings were suspended, due to the slump in that trade and the practical discontinuance of production by all the car and tractor manufacturers in the Dominion. The company had just completed new drop forgings equipment for the making of crank shafts and other heavy forgings for motor cars. As a result, the new equipment has had no opportunity to demonstrate its earning power.

The board of directors was reduced from 12 to 10 and the following were elected: J. H. A. Briggs, Hon. G. P. Graham, James Arnold, Brockville, Ont., Sir Thomas Shaughnessy, W. D. Robb, W. M. Weir, E. F. Conway, Lt. Col., C. W. McLean, Montreal, W. T. Sampson, Gananoque, Lt. Co., C. N. Monsarrat, Ottawa. The board named the following officers: President, W. M. Weir; vice president, Hon. Geo. P. Graham; secretary, J. H. A. Briggs; general manager, James Arnold.

Plan $100,000,000 Bridge To Span Hudson

The Hudson River Bridge Corp. has been recently organized with a capital of $251,000 to build a bridge across the Hudson river at Fifty-seventh street, New York. The bridge has been in contemplation for many years. George A. Post has been elected president of the new company, resigning as head of the Standard Coupler Co., 30 Church street, New York. Offices of the Bridge company will be established at 5-7 Dey street, New York.

Simultaneous with the incorporation of the company was the announcement of the naming of a committee of about 100 members, citizens of New York and New Jersey, for the purpose of organizing a public movement in support of the bridge project. Among the members of this committee are several who were associated with the original plan more than 30 years ago, including Samuel Rea, president of the Pennsylvania railroad; Thomas F. Ryan and Gustav Lindenthal, who resigned and built the Hell Gate bridge, and a number of the other larger bridges of the country. Mr. Lindenthal is the author of the present plan and will be the chief engineer.

The proposed bridge is to be double decked, with the center of its central or river span 165 feet above the water. It is expected to accommodate 14 railroad tracks, four on its upper deck and 10 on its lower, and is to have a capacity of 600,000 persons an hour. It is to accommodate 12,000 vehicles, and will sustain on its upper deck 40,000 tons of vehicular freight.

The bridge will cost $100,000,000, it is estimated, and the appurtenances a similar sum. The project is to be financed by private capital, as public funds could not be had without enacting legislation, which might require many years. The estimated construction will require seven to eight years. The work involves the erection of a classification and terminal yard in New Jersey, an elevated railroad on the west side of Manhattan for freight and passengers, a union station in Manhattan for roads now terminating in New Jersey, a moving platform under Fifty-seventh street and across the bridge, a power plant and other necessary adjuncts.

Steel Spring Net Gains

Net earnings of the Railway Steel Spring Co., for the year ended Dec. 31, 1920 amounting to $4,394,354, showed a gain of approximately $39,000 over the $4,435,350 earned in 1919. Reserves for taxes decreased from $1,200,000 to $1,000,000, while dividends paid remained the same, $2,025,000. The company now has a total surplus of $12,942,354. The balance sheet shows an increase in assets $42,760,445 in 1919 to $13,598,510 in 1920. Inventories increased from $3,809,824 to $5,103,967. Cash decreased from $2,277,715 to $1,981,754. This is offset by an increase in bills and accounts payable from $1,822,754 to $4,061,186.

Will Make Auto Castings

The Clinton Stove Co., Clinton, Ind., has entered into a contract to make many of the casting parts for the Ford Motor Co. This new branch of manufacture was taken on for the purpose of making it possible for the Clinton plant to operate when the stove business is dull.

Elects New Officers

At the annual election of officers of the Concrete Mixer Association of the United States recently held in Chicago, Clifford Messinger, general sales manager of Chain Belt. Co., Milwaukee, was elected president for the coming year. W. B. Knickerbocker, of the Knickerbocker Co., Jackson, Mich., vice president; A. T. Scannell of the Archer Iron Works, Chicago, treasurer; H. E. Smith, president of the T. L. Smith Co., Milwaukee, chairman of the executive committee, and P. A. Koehring, secretary of the Koehring Machine Co., Milwaukee, and Z. W. Carter, sales director of the Austin Machinery Corp., Chicago, members of the committee.

The Baltimore Drydock & Shipbuilding Co., Baltimore, on Feb. 17 reduced the wages of its 4000 employes by approximately 10 per cent.

Men of the Iron Trade

Personal News of a Business Character Regarding the Men of Affairs of the Industry

WILLIAM M. WEIR, who was for several years president of Canada Foundries & Forgings, Ltd., Brockville, Ont., which position he resigned and was succeeded by Thomas J. Dillon, general manager, has been re-elected to the presidency following the retirement of Mr. Dillon. Mr. Weir is a director of the DeLancy Forge & Iron Co., Buffalo, Carriage Factories, Ltd., and other companies.

Wright D. Evelyn has succeeded J. S. Halbert in the Salt Lake City office of the Midvale Steel & Ordnance Co.

J. Turner Moore, president of the Reading Steel Casting Co., Reading, Pa., has been elected president of the Colonial Trust Co.

Lucius M. Wainwright, head of the Diamond Chain & Mfg. Co., Indianapolis, has been made a director of the Indianapolis chamber of commerce.

B. O. Clausen has been made manager of the Philadelphia office of the Celluloid Zapon Co., New York. His address is 520 Walnut street.

G. Walter Sanborn, formerly assistant purchasing agent of the United Engineering & Foundry Co., Pittsburgh, has been promoted to be purchasing agent. N. J. Green now is his assistant.

Frank Hodson, president of the Electric Furnace Construction Co., Philadelphia, has been elected a member of the executive committee of the Philadelphia Foundrymen's association.

F. J. Griffiths, vice president and general manager of the Central Steel Co., Massillon, O., has been elected a director and vice president of the Massillon Rolling Mill Co., Massillon, O.

Senator Frederic Nicholls of Toronto, has resigned his position as vice president of the Dominion Steel Corp., giving as a reason the press of other duties.

Albert Walton, industrial engineer, has returned to active practice, now being connected with the firm of Walton & Wright, industrial engineers, 1137 Commerical Trust building, Philadelphia.

Quincy Bent, vice president of the Bethlehem Steel Co., has been elected a trustee of Williams college, Williamstown, Mass. He is a graduate of the class of '01.

Russel W. Schultze, who for some time has beeen connected with the San Francisco and Seattle offices of the Midvale Steel Ordnance Co, has been appointed manager of the Los Angeles office in the Title Insurance building.

James B. Graham, president of the Northern Central Trust Co., Williamsport, Pa., has been made president of the board of managers of the Crescent Refractories Co., Curwensville, Pa.

Thomas K. Glenn, president of the Atlantic Steel Co., Atlanta, left Feb. 23, for Buenos Aires, Argentina, to spend several months in South America in the interests of the steel company.

John W. Harrington, a director of the Harrington & Richardson Arms Co., Worcester, Mass., has been elected treasurer to succeed George F. Brooks, who continues as secretary and clerk of the corporation.

Charles C. Harper, formerly president of the Standard Sewer Pipe Co., Rome, Ga., has been elected vice president of the Co-Operative Rubber & Mfg. Co., which recently opened its plant in Atlanta.

E. C. Melby has been placed in charge of offices recently opened at 21 East 40th street, New York, by F. J. Ryan & Co., Philadelphia, metallurgical and chemical engineers. F. A. Hall is director of sales, S. H. Ourbacker director of engineering, and T. B. Bechtel director of construction of the company.

W. A. Taylor, who for some time past has been western manager of the La Belle Iron Works with offices in the Rialto building, San Francisco, has closed the office and joined the organization of C. W. Pike Co., San Francisco, which now represents the La Belle company in the West.

J. L. Nellis, formerly with the Peterson Core Oil & Mfg. Co., has opened an office at 108 South La Salle street, Chicago, for the sale of foundry supplies and equipment. Mr. Nellis is a son of the late J. F. Nellis, for many years identified with the Charles C. Kawin Co., Chicago.

Ernest T. Clary, assistant treasurer and works manager of the Whitcomb-Blaisdell Machine Tool Co., Worcester, Mass., who has resigned to take effect March 1, has taken a position with the Whitin Machine Works, Whitinsville, Mass. He has been with the company 12 years, the last three in his present positions.

James P. Sprague, Kansas City, has been appointed district representative of the Falcon Steel Co., Niles, Ohio. Mr. Sprague will represent the company in the territory which includes Kansas, Nebraska, Oklahoma, and the western portion of the states of Iowa and Missouri and will devote his attention to the sale of black, blue annealed and galvanized steel sheets.

Theodore A. Straub, formerly vice president and general manager, has been elected president of the Fort Pitt Bridge Works, Pittsburgh, at a recent meeting of the board of directors. Other officers elected at the same time were H. R. Bickle who was formerly secretary and chief engineer and now assumes the duties of vice president and consulting engineer; also P. B. Straub who becomes secretary and treasurer. Mr. Straub prior to the election was treasurer.

N. C. Hoyles, civil engineer, for the past year assistant manager of the New York office of the Pittsburg Testing Laboratory, recently has been appointed manager of the Cincinnati office of the same laboratory with headquarters at 813 Race street. From 1909 to 1914, Mr. Hoyles was manager of the Birmingham, Ala., branch of the company, at which time he left to join the Canadian military forces. He saw service overseas with the Canadian engineers, being discharged at the end of the war with the rank of lieutenant colonel.

Roger M. Freeman, in charge of the design and construction of the armor plate and gun forging plant for the navy department at South Charleston, W. Va., has gone into business for himself as construction engineer, with headquarters at 8 West Fortieth street, New York. As supervising engineer for the navy Mr. Freeman was in charge of the construction and design of the Erie Forge & Steel Co., Erie, Pa.; the forging plant of the Pollak Steel Co., Cincinnati; and the heat treatment plant of the Allis-Chalmers Co., Milwaukee.

Tool Builders Discuss Costs

Consider Plan for Uniform Cost Accounting at Cleveland Convention—Discuss Depreciation and Obsolescence—General Business Situation Reviewed and Future Activities of the Organization Are Outlined

COSTS of manufacture and a uniform plan of cost accounting were the leading subjects discussed at the semiannual meeting of the National Machine Tool Builders' association at the Hotel Cleveland, Cleveland, Feb. 24 to 26. A preliminary report on the subject of a uniform cost accounting plan was submitted by C. H. Scovell, of Scovell, Wellington & Co., New York, public accountant, in which the matter of costs as related to the machine tool building industry was dealt with in minute detail. This report was prepared following a special meeting of the association's executive committee in December and a number of regional meetings under the direction of the accountant firm, held at Chicago, Cincinnati, Cleveland, Worcester and New York, between Jan. 11 and 20. The general plan was adopted.

The opening session of the convention, which has been advanced from May at Atlantic City, N. J., was devoted to routine work and the submission of general reports, etc. This meeting, which was presided over by August H. Teuchter, of the Cincinnati Bickford Tool Co., Cincinnati, president of the association, as were the other general sessions, was followed by the submission of the cost accounting report. Discussions were in order, members having been advised before hand to come prepared to ask questions concerning any part of the plan as submitted, and a number of very interesting discussions resulted.

In a general way the cost subjects treated in the report, included: Job order costs, burden distribution, interest on investment, fixing the burden rate and the normal rate, burden earned and unearned, monthly statement, less detail for a small business, separate kinds of business, spoiled work, drawings, jigs, patterns and fixtures, supplies, tools, repairs, depreciation and obsolescence, and preparation of an estimate sheet.

Include Investment Interest

Each section of the report came up for discussion, but those of special interest included the recommendation that interest on investment be included in calculating the cost of manufacture. It was pointed out that without this the overhead or burden of different departments, or of different machine tools would not be correctly stated, particularly in view of the fact that large and costly tools would otherwise have an insufficient burden rate as there would be nothing to measure the cost of tying capital up in such equipment in comparison with light and relatively inexpensive machines. It was further explained that interest should be reckoned on all the assets employed in manufacture including land, buildings, equipment and inventories, the immediate effect being to increase the burden of that work which is done with large and costly machines in comparison with work done with smaller capital investment.

Another part of the report which was of more than passing interest, was that of fixing the burden rate. This section of the report dealt with all burden factors entering into costs, including land and buildings, steam and power costs, general burden and repairs, supplies and indirect labor. It was pointed out that the idea of distributing burden to departments or production centers was particularly applicable to the larger shops and that for the small shops the idea was to develop or recognize all burdens that exist and make plans to have it added to the cost of production. According to the full plan as pointed out in the report, when the shop is busy all of burden will be earned and will thus be carried into work in process, whereas when the shop is operating on part time, a corresponding portion of the burden will be unearned or unabsorbed. This general plan was approved by the convention.

An interesting part of the report was that dealing with depreciation and obsolescence. In connection with the general statement regarding yearly depreciation, etc., the minimum rates recommended were, for concrete buildings 2½ per cent; brick buildings, 4 per cent; wooden buildings, 6 per cent; machine tools, 10 per cent; transmission, line shafting, hangers, pulleys, etc., 15 per cent; electric motors, 10 per cent; overhead traveling cranes, 10 per cent; all other boiler house, power house, electrical plumbing, heating and ventilating equipment, 10 per cent; motor trucks, heavy 20 per cent and light, 30 per cent; passenger cars, 30 per cent; office furniture, 15 per cent; office mechanical equipment, 25 per cent and shop furniture, such as racks, bins, benches, etc., 25 per cent. These rates, the report stated, should be calculated upon the first cost of the asset and set up annually in reserve for depreciation account.

Other sections of the report came up for discussion, much of which was deferred until the last day of the meeting. Mr. Scovell in presenting the report, illustrated it with graphs and charts, which were referred to throughout the meeting.

The general business situation was discussed in detail at the Friday morning session, J. B. Doan, American Tool Works Co., Cincinnati, leading the discussion. The lack of general demand and what should be done pending the revival of business was gone into minutely. E. J. Kearney, Kearney & Trecker Corp., Milwaukee, followed this discussion with an address on "How to Run a Machine Tool Business in a Time of Depression." His address dealt principally with statements regarding general financing, etc. F. A. Geier, Cincinnati Milling Machine Co., Cincinnati, also delivered an address on general financing, dealing with business questions now confronting the industry. Ernest F. DuBrul, general manager of the association, outlined the general activities of the association, going into detail not only on what the organization is doing, but what it planned to do regarding standardization, a proposed financial survey, etc.

Discusses Foreign Conditions

Friday afternoon was devoted to executive sessions, general subjects of the various committees being discussed. The convention closed Saturday morning, following a general session at which committee reports were read and submitted, and statistical work of the organization outlined. At this meeting, H. C. Kraut, of Joseph T. Ryerson & Son, Chicago, outlined conditions existing in the various countries of Europe. His address covered the situation both from a financial and industrial standpoint, conditions in England, France, Germany, Roumania, Italy and a number of other countries being described. In Mr. Kraut's opinion, although Europe is on the sick list, industrially and financially, signs of a revival are already apparent. Mr. Kraut does not think Europe, as it is today,

offers much of a market for the products of American machine tool builders.

At the last general session it was decided to hold the regular convention at Atlantic City in May. It was thought that although the general situation had been covered at this convention, a meeting in the spring would be advisable.

An informal banquet was held Wednesday evening at which Mr. Teuchter presided, and a number of the delegates were called upon for addresses. As a sidelight, a number of the members of the association presented G. E. Merryweather, Motch & Merryweather Machine Co., Cleveland, with a handsome gift of a set of furnishings for his den. This was presented for his activity in the service of the government during the war, while the association presented Charles E. Hildreth, who recently resigned as general manager of the association, with a handsome silver service set, in recognition of his services in connection with the association. W. A. Viall, of Brown & Sharpe, Providence, R. I., made the presentation speech. More than 160 members attended the convention.

Mill Elects Officers

At the annual meeting of the Massillon Rolling Mill Co., Massillon, O., F. J. Griffiths, vice president and general manager of the Central Steel Co., was elected a member of the board of directors. Following organization of the board of directors Mr. Griffiths was made vice president of the company. The directorate includes R. E. Bebb, Charles C. Chase, Fred H. Snyder, W. A. Deilhenn, Joseph Immler, I. M. Taggart, Peter Benninghoffen, H. M. Geiger, Maurice Bissel and Mr. Griffiths. Officers of the company are: President, R. E. Bebb; general manager, Charles C. Chase; secretary, Joseph Immler and treasurer I. M. Taggart. The company now has five mills in operation.

Large Plates Rolled

What are believed to be the largest plates ever made, recently were rolled on the large new plate mill of the Lukens Steel Co., Coatesville, Pa. The finished size of these plates, three in number, was 280 x 196 inches, and 2 1/8 inches thick. The ingot used for each plate weighed 41,500 pounds, and the weight of each plate after shearing was 33,400 pounds. The plates were of boiler steel for boiler work. The 206-inch rolls were in the mill when these particular plates were rolled.

Adjust Rates

On Ocean Freight at Atlanta Meeting —Plan Industrial Growth

Atlanta, Ga., Feb. 28.—Steamship operators from Boston, New York, Baltimore, Philadelphia and Norfolk, and from all of the ports of the South Atlantic and Gulf Coast, at a conference held recently in Alaska readjusted ocean freight rates on commodities contingent to and moving through the North Atlantic, South Atlantic and Gulf Coast ports. Through the adoption of new tariff schedules an equitable distribution of products will be thus obtained through the ports represented. South Atlantic and Gulf ports are accorded competitive equities, that have heretofore been denied them, as a result of the readjustment of the rates.

Directors of the General Fire Extinguisher Co., New York, held their annual meeting recently at Columbus, Ga., at which officers were re-elected as follows: President, Frank H. Maynard, New York; vice-president and general manager, Russell Grinell, Providence, R. I.; second vice president, W. A. Neracher, of Warren, O.; treasurer, L. W. Jones, Providence; secretary, Edgar W. Shaw, of Providence. Officials and directors have been making a tour of the various plants operated by the company, and went to Columbus, Ga., for the annual meeting after inspecting the plant in Atlanta. From Columbus they went to Savannah, Ga., where the company also owns a plant.

The Georgia School of Technology, of Atlanta, has established an industrial development department. Its purpose is to interest outside capital and investors in the industrial resources of Georgia and the development of the state's mineral and mining resources. One of Georgia's primary resources is its mineral and mining lands which are not developed. At present such ore as is mined is sent outside the state for smelting. In a report made following a survey by this institution it was pointed out that the full development of this natural resource could hardly be brought about unless a number of furnaces were established to handle the product locally, instead of making shipments of ore outside the state to be made into pig iron.

William E. Dunn Jr., secretary of the Southern Metal Trades association, has recently issued a report which shows the developments of this organization in the Southern states, Mr. Dunn became secretary about three years ago. At that time there were only 16 mem members, now there were only 150 in in 10 of the states. Its membership is confined to operators of foundries, and machine shops. Each of the 10 states within the association's scope is divided into a separate division. A vice president of the association is in charge of activities in each state.

Promise of an increased demand for soil pipe and fittings has caused the operators of plants in the Gadsden, Ala. district to decide on the immediate resumption of operations. The plant of the Coosa Pipe & Foundry Co. already has resumed on a schedule of four days a week. The Gadsden Pipe Co., expects to start Feb. 1.. The Agricola & National Foundry Co's. plants have started already.

Settlement of wage differences by foundry workers and the Anniston Steel Co., Anniston, Ala., which has been followed by the men returning to their duties, is expected to be followed shortly by satisfactory adjustment of wage differences between the pipe molders and the various companies in Anniston. Most of the pipe plants have been idle since a few days before Christmas. Because of lessened demand and lower prices the pipe companies announce reductions in wages prior to reopening. The molders claimed the reductions were too great and submitted counter propositions.

The plate mill of the Bessemer Rolling Mill, Bessemer, Ala., has resumed operations after a period of idleness which extended over several weeks. With the starting of the plate mill the entire plant is in operation. During the early part of March it is expected that many of the plants in the district that are now closed down will begin operating again on part time schedules at least.

The Alabama coal strike came to an official end Feb. 22. Concurrent with an order by the United Mine Workers of America, suspending strike orders, national guardsmen were withdrawn from the area. By agreement between the coal operators and the union, the question of settlement has been placed in the hands of Governor Kilby, who has accepted the office of mediator.

Steel Holders Grow

Holders of the common stock of the United States Steel Corp. as of Jan. 31, 1920, numbered 99,000 and preferred stockholders 81,000. There were 20,500 holders of both common and preferred stock, making the total number of stockholders of both classes approximately 170,000. The number of employes and members of their families holding stock has reached a record total of 66,506.

The Norwalk Iron Works, South Norwalk, Conn., has announced a wage reduction of approximately 20 per cent.

Obituaries

JOHN A. Sutton, aged 68, who resigned in May, 1920, as first vice president of the Crucible Steel Co., of America, Pittsburgh died Feb. 22 at his home in Pittsburgh. Mr. Sutton was born in Indiana, Pa., and received his education at Elder's Ridge academy, Tuscarora academy and Professor Hasting's school in Philadelphia. In 1870 he entered Lafayette college but upon the death of his father, left in his sophomore year. He then started in business in Utica, N. Y., but in 1873 located in Pittsburgh and became a partner in Smith, Sutton & Co., which later became the La Belle works of the Crucible Steel Co. He later was connected with Park Bros. & Co., until it became a part of the Crucible company. After leaving Park Bros. & Co., Mr. Sutton became secretary and treasure of the Clairtion Steel Co., until it was purchased by the United States Steel Corp. He then returned to the Crucible Steel Co., as fourth vice president, where he advanced successively to the third, second and first vice presidencies. He held the latter position until he resigned in May, 1920. He was a member of the Duquesne and Allegheny Country clubs.

Thomas J. Calnen, Springfield, Mass., for 45 years one of the leading steel contractors in western Massachusetts, died at his home in that city, Feb. 25. He was born in Newark, N. J.

Charles Howard Platt, former vice president of Adriance Platt & Co., manufacturers of harvester machinery, Poughkeepsie, N. Y., died recently at his home in New York City, aged 48.

Frank Lummus, president of the Lummus Gin Co. died Tuesday, Feb. 22, at his home in Columbus, Ga. He was 67 years of age and had been ill for a period of several months.

Louis Gendron, the last of the original directors of the Warren Steam Pump Co., Warren, Mass., and for many years a foreman for the company, died in a hospital in Worcester, Mass., Feb. 22, aged 71 years.

William C. Loring, vice president of the A. F. Way Co., Inc., Hartford, Conn., builder of machinery, was found dead in his home in East Hartford, Conn., Feb. 18, a victim of gas fumes. Death was accidental, according to the medical examiner.

Henry Miller, formerly president and general manager of the Walker Wells Co., Amesbury, Mass., builder of automobile bodies, and president of the Powow Mfg. Co., Amesbury, died at his home in that town, Feb. 23, aged 47 years.

Simon Willard Wardwell, president of the Wardwell Braiding Machine Co., Central Falls, R. I., died at his home in Providence, R. I., Feb. 19. He was the inventor of the universal winding machine, rapid binder and other important inventions.

Kurt Rudolph Sternberg, formerly treasurer and general manager of the Dickinson Mfg. Co., Springfield, Mass., maker of electric molded insulations, died at his home in Ambler, Pa., Feb. 24. After leaving Springfield about two years ago he was an industrial chemist in Ambler.

I. E. Edwards, general manager of the Blairsville Iron Works, Blairsville, Pa., died at his home in that city Feb. 24. He was born in Youngstown, O. 46 years ago and formerly was manager of the plant of the Valley Mould & Iron Corp. at its Josephine, works, Black Lick Pa.

William Eben Stone, long actively identified with mining interests, died at his home in Cambridge, Mass., Feb. 23, aged 75 years. After graduating with the first class at the Massachusetts Institute of Technology, he went to Marquette, Mich., where he remained for seven years in the employ of various iron mining companies. In 1874 he became secretary of the Champion Iron Co. of Michigan, and later was its treasurer and general manager, with offices in Boston.

David H. Andrews, who organized the Boston Bridge Works in 1891, of which he was the president, died at his home in Newton Center, Mass., Feb. 24, aged 76 years. After his college days, Mr. Andrews was engaged in mechanical engineering in Worcester, Mass., for two years, and later became an assistant engineer for the National Bridge & Iron Works, Boston, continuing as such until, in 1876, when he began business under his own name, as a builder of bridges. He was a member of the American Society of Mechanical Engineers, the Boston Society of Engineers and the Engineers' club, Boston.

Adelbert P. Hine, aged 69, for many years general superintendent of the local branches of the American Brass Co., Waterbury, died recently at his home. He was one of the pioneers in the brass industry, and for over 40 years was connected with the American Brass Co.

Charles Herbert Talbot, purchasing agent for the Pittsfield, Mass., branch of the General Electric Co., died at his home recently after a long illness. He has been purchasing agent for the General Electric Co. since 1904.

Price Softness

Noted In Ammonia Sulphate—Other By-Products

New York, March 1.—Continued lack of demand for sulphate of ammonia has resulted in further weakening, prices now holding at $3 to $3.25, f.o.b. works. As a matter of fact, a sizeable inquiry undoubtedly would result in further concessions. At the moment there are a couple of small foreign inquiries current, but there is no indication of these being closed and the market is about as listless as at any time within the past several months.

In regard to other coal tar products, prices appear slightly firmer. Pure benzol is quoted 30 to 26 cents, per gallon f. o. b. works; 90 per cent benzol, 29 to 34 cents; solvent naphtha, 29 to 34 cents and toluol, 30 to 36 cents. Naphthalene in flakes is quoted at 9 to 10 cents and in balls at 10 to 11 cents.

While a slight improvement is noted in buying, especially in benzol, the market still is far from active. Naphthalene is being bought in fair quantity and principally for future delivery. Shipments, however, continue to go forward in good volume.

Coke Oven By-Products

Spot

Per Gallon at Producers' Plants

Pure benzol	$0.30 to .36
Toluol	.30 to .36
Solvent naphtha	.29 to .34

Per Pound at Producers' Plants

Phenol	nominal
Naphthalene, flake	$0.09 to .10
Naphthalene, balls	.10 to .11

Per 100 Pounds at Producers' Plants

Sulphate of ammonia	$3.00 to $3.25

Contract

Pure benzol	$0.30 to .36
Toluol	.30 to .36
Solvent naphtha	.29 to .34

Per Pound at Producers' Plants

Phenol	nominal
Naphthalene, flake	$0.09 to .10
Naphthalene, balls	.10 to .11

Per 100 Pounds at Producers' Plants

Sulphate of ammonia	nominal

The Trumbull Electric Mfg. Co., Plainville, Conn., has reduced its operating schedule from 45 to 40 hours a week.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

ORGANIZED with a capital stock of $100,000, of which $60,000 of the common stock has been paid in, the Hanover Utilities Corp., which was recently chartered under the laws of New York, state, will manufacture and sell lighting plants. These plants are being built for the company under contract, by the Hanover Motor Car Co., Hanover, Pa. The present address of the new company is 63 Park Row, New York, but it plans to move to larger quarters shortly. Officers are: President, P. G. Gilliard; secretary, E. C. Eliopoulos and vice president and treasurer, N. Tonkin. In addition to making and selling lighting plants, the company is also interested in manufacturing and selling machinery of all kinds, and is conducting an export and import department in these lines.

* * *

WITH an authorized capitalization of $200,000, the Sheppard Envelope Co., which was recently incorporated, will take over the entire business and equipment of the J. E. Sheppard Co., Worcester, Mass., which has been making a specialty of envelope machines. Officers of the company are: President, J. Warren Sheppard; vice president, Eugene A. Cahill and secretary, James E. Sheppard. All of these men were prominently connected with large business interests in New York and New England. The company will manufacture envelopes and envelope machines.

* * *

AT THE annual meeting of the Schartow Mfg. Co., South Milwaukee, Wis., saddlery hardware, harness chains, small malleable castings and specialties, it was decided to change the corporate title to The Midland Co. Officers were re-elected as follows: President and general manager, R. A. Nourse; vice president, T. E. Ward; secretary and treasurer, C. P. Nourse. The new style was adopted to perpetuate the old name of an industry established many years ago by Mr. Nourse as the Midland Iron Works, which later was acquired by the Stowell Co., of South Milwaukee. Mr. Nourse is vice president and general manager of the Stowell Co., and Mr. Ward is secretary of the same concern. The Schartow company orignally was established at Racine, Wis., but was moved to South Milwaukee about a year ago.

* * *

ADVICES have been received to the effect the Liberty Machine Co., Wauwatosa, Wis., has been incorporated with $10,000 capital stock, by William J. Grede, J. Keller and A. E. Strand. The company will take over the manufacture and sale of electrical fixtures, fittings, etc., formerly manufactured and sold by the Liberty Foundry. The office and plant of the new organization will be on the property of the Liberty Foundry for the present as the company does not plan additional buildings, etc., at this time. In about six months it plans to purchase a few machines.

* * *

PURCHASE of the controlling interest in the Valley Iron Works, of Appleton, Wis., by Ernest Mahler and associates from W. A. Fannon, Dr. E. A. Morse and Mrs. Bertha M. Peterson, is announced. The company conducts a foundry and machine shop and specializes in the manufacture of a new type of papermill beater designed and patented by Mr. Mahler, who is general manager of the Kimberley-Clark Co., Neenah, Wis. E. A. Peterson, who is general manager of the Valley company, will be president under the new ownership.

* * *

THE Kochring Co. of Milwaukee is the corporate style of a new concern which has been granted a charter in Wisconsin. It is a development of the Koehring Machine Co., Milwaukee, manufacturer of concrete mixers, paving outfits and similar products, street and highway machinery. The new corporation has a capital stock of $2,500,000 of preferred shares of a par value of $100 each, and $25,000 shares of common, having no par value. Philip A. Koehring, Austin W. Erwin and William J. Zimmers, attorney, Wells building, appear as incorporators.

* * *

APPOINTMENT of the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., as exclusive agents in the United States and possessions as well as Canada, of the line of industrial type electric furnaces, manufactured by the Electric Heating Apparatus Co., Newark, N. J., has been announced. The standard heavy duty industrial furnaces include 12 different sizes from 18 inches wide, 24 inches long and 13½ inches high, inside dimensions, with a capacity of 22 kilowatts, up to 32 inches wide, 72 inches long and 16 inches high, with a capactiy of 80 kilowatts. Either automatic or non-automatic temperature control is supplied with the furnaces.

* * *

DEVICES for making and issuing on a tape a record of sales and withdrawals of gasoline, lubricating oil or any liquid dispensed from a self-measuring pump, will be produced and sold by the National Liquid Recording Corp., 74 Cortlandt street, New York, which was recently incorporated with $100,000 capital stock. It is not the company's intention at this time to build a plant as it has arranged for the construction of its products under contract. Officers of the company are: President, A. K. Sloan; first vice president, Herbert S. Barnes; second vice president, R. G. Remington; secretary and treasurer, Frank J. McEwen and general counsel, M. B. Cary.

* * *

CAPITALIZED at $250,000, the Davis Parcel Checking Co. Inc., 200 Fifth avenue, New York, recently was incorporated under the laws of New York state. The company's business will consist of installing cabinets containing coin controlled steel lockers, principally on railroads, for the purpose of checking hand baggage and parcels. The company will not build a plant as it has contracted to have its equipment manufactured by established manufacturing companies. Officers of the company are: President, Augustine Davis, who was formerly president of the Davis Bournonville Co., Jersey City, N. J.; vice president, J. T. Earl; general manager, Charles L. Brand and secretary, K. C. Madden, all of whom were formerly connected with the Davis Bournonville Co. in important capacities.

Here and There in Industry

Live Information Which Records the Expansion of Various Lines of Productive Enterprise

PRESSES, turret lathes and drill presses will be needed by the Holley Mfg. Co., Newark, N. J., which was recently incorporated with $50,000 capital stock, by E. D. Holley, president, E. S. Holley, vice president and manager, Walter Mayer, treasurer, J. A. Thomassen, secretary and assistant treasurer and Robert Perry, director. The business formerly was conducted by Elmer E. Holley, being for the past five years engaged in the manufacture of gas and electric fixture parts for lighting purposes, terminals for electric connectors, oil lamps and burners, electric push buttons, switch plates, metal stampings, etc. The company is now planning to build an addition, 50 x 100 feet, for which it will need the new equipment.

* * *

DAVID Higginbotham, Uniontown, Pa., has transferred to the Pittsburgh Steel Co., Pittsburgh, 269.61 acres of land in Monongahela township. It is understood the steel company is purchasing the property for a town site.

* * *

Actual construction work on buildings to double the capacity of the plant of the Sharpsville Boiler Works Co., Sharpsville, Pa., has been started by the Independent Bridge Co., Pittsburgh. All of the material now is on the ground and all operations will be directed toward an early completion.

* * *

THE Louisville Electical Mfg. Co., Louisville, Ky., a new organization is having a modern factory building constructed and expects to begin operations very soon. The company will manufacture electric drills, as well as other electrical machinery, and also will specialize in all manner of electrical machinery repair work. E. E. Willy is president and J. F. Willy is vice president.

* * *

ED. Morton & Co., Louisville, Ky., will install a heavy machinery and machine tool department to better care for the requirements of manufacturers in Louisville and vicinity. The new department will be in charge of C. M. Fleming. Included in this line in stock will be lathes, drill presses, planers, engines, hoisting machinery, pumps and compressors, wood working machinery and a complete equipment for contractors.

* * *

THE Madison Hardware Specialty Co., Madison, Wis., is planning to erect a 3-story warehouse and office building in the spring. The company was established in March, 1918, by a group of the large hardware dealers in southwestern Wisconsin and carries a widely diversified stock of heavy hardware, shelf goods, etc. The shelf line is to be greatly enlarged in the new quarters. Louis Hirsig is secretary and treasurer.

* * *

A CHARTER has been granted the Bickett Rubber Products Corp. Watertown, Wis, which has been organized by L. W. Bickett and Max G. Kussel to manufacture a wide variety of rubber goods of all descriptions. The capital stock consists of 1,000 shares of prefered stock with a par value of $100 each, and 2000 shares of common stock without par value. An existing plant will be taken over at once and some retooling will be done, but specifications have not yet been made public.

* * *

TO PROMOTE modern textile methods, textile machinery and equipment, and to maintain a business, engineering, developing, assembling and selling departments, and have its various lines produced by a series of shops, the Kuenneth System, Inc., 45 Hamilton avenue, Paterson, N. J., recently was organized. The chief aim of the company will be to maintain and conduct its business relation between the series of shops which are to become eventually subsidiaries of the Kuenneth System, Inc.

* * *

THE Advance Foundry Co., Dayton, O., has advised that it will not need any additional equipment for the addition to its plant which it is now planning. This addition will be used exclusively for shipping and receiving, but a part will be devoted to cleaning and storage. The structure will be the same in every detail as the present foundry building, and with its completion the company feels it will be in a better shape to care for its business in a more systematic manner.

* * *

THE Chicago Coil Spring Co., Chicago, now has under construction an addition to its plant, which when completed, will increase its capacity about 100 per cent. The structure will add about 18,000 square feet of floor space to the present plant. This will be devoted exclusively to the manufacture of upholstering springs, furniture and automobile couch constructions, japanning ovens and steel treating furnaces. It will be equipped with a full line of spring making machinery, all of the latest design.

* * *

THE Victor Krefl Mfg. Co., a new company incorporated at Two Rivers, Wis., to manufacture automobile accessories, has been taken over the plant formerly occupied by the Two Rivers Plating Works, which was merged with the Metal Ware Corp. of the same city several months ago. Some new equipment will be purchased for general metal working. The Krefl company has a capital stock of $75,000 and the principal owners are Victor Krefl, Adolph Kummerow, H. C. Wentorf, Charles Tessmer and William Rehrauer.

* * *

ANOTHER unit will be added to the plant of the Standard Sanitary Mfg. Co., Louisville, Ky., shortly. Officers of the company are making plans for a modern pottery plant which will cost approximately $50,000. Plans for the structure are being drawn by E. T. Hutchings, architect. The building will be 75 x 200 feet and will be one story high with full basement. It will be of the "monitor" type, with specially raised roof to provide light and ventilation. The floor will be of heavy mill construction, foundations of concrete, with brick walls, steel sash, and steel truss roof supports and mill construction roof with composition covering. The basement will be partitioned into 10 bins for storing as many varieties of clay used in pottery making. An elevator will be installed to facilitate handling of materials. The new pottery plant of the Standard Sanitary Mfg. Co. will be used for the manufacture of china handles and making a variety of small fittings, and for turning out parts of brass fittings.

February Tool Market Was Dull

Sales Were Few and Confined to Single Machines—Inquiries Increased, Indicating Future Demand of Fair Size—Price Reductions Continued To Be Made—Crane Business Reported Sold Ahead

LITTLE change has been noted in the machine tool and equipment market in the month just past. As has been the rule for some time, general trading has been at a minimum, sales in most instances being confined to single tools and although orders were on the increase as compared with the preceding month, sales were as few or fewer than in January. Price reductions were the main topics between buyers and sellers. The former demanded concessions while the latter, generally, refused to quote lower. During the month there were no outstanding sales made, nor were there any inquiries of size to come out which would have a bearing on the market. One sale of German tools to a northern Ohio crane manufacturer was recently reported, but the buyer actually purchased but one German tool, and says this was done only when manufacturers in this country could not promise delivery on this equipment for many months.

More Price Cutting Reported

DURING the month further price drops were reported. Tool makers in practically all sections reported some decline and equipment makers generally announced reductions. Although many tool manufacturers have announced reductions, ranging all the way from 10 to 40 per cent, manufacturers in the main are still demanding their old prices. Electrical equipment makers reduced, the General Electric Co., Schenectady, N. Y., and the Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., announcing reductions of 10 per cent on motors. Two Ohio manufacturers of shapers are known to have reduced, while an Ohio maker of straightening presses dropped its schedule approximately 20 per cent. In addition, a Pennsylvania Tool maker, The Landis Tool Co., Waynesboro, Pa., announced a 15 to 20 per cent reduction, while a midwestern manufacturer of drill presses and special machines cut 20 per cent. In addition to these announced reductions dealers and jobbers in many instances are known to have shaded prices, where a good order was involved and in a number of instances fairly good sales were made.

Business Continued at Minimum

WHILE many makers in February lowered their quotations, business as a whole remained dull during the month. Most business done was confined to used equipment. It became known during the month that many buyers who previously would not consider second hand equipment, closed on quite a quantity of used machinery during the past few weeks. This, is due, no doubt, dealers and manufacturers state, to the advantageous prices, at which used machinery is being offered.

Pittsburgh and Chicago Districts Active

DURING the month a New England tool maker reported that from a compilation he had made it is shown that since the first of the year the most activity in the market has been noted in the Pittsburgh and Chicago districts. Trading in the New York territory and the New England district, according to these figures, has been, since the first of the new year, and still is at a minimum. No general pickup in business is looked for by most manufacturers and dealers for some time, although some of the more optimistic expect a general revival in the spring.

Price Is Leading Topic

SIGNS that price is the main holdup to many sales have been evident in all sections of the country. In the Chicago district, manufacturers have stood steadfastly to their quoted prices refusing to grant any concessions in the belief that these would not revive buying. On the other hand, buyers in that district have made it plain they do not intend to buy until the prices fall. One of these buyers, the Santa Fe railroad, some weeks ago issued a large inquiry but failed to close because of the fact manufacturers and dealers could not come to an agreement on price. As a result this business went begging, until last week, when it was understood a number of manufacturers had agreed to grant concessions. Consequently the railroad was ready to talk business.

Few Sales of Size Made

FEW sales of size were made. Of interest was the sale by a Pittsburgh maker of a quantity of machinery to the Ohio Locomotive Crane Co., Bucyrus, O. This equipment included one 60-inch lathe with 30-foot bed; one 10-foot double housing planer with 20-foot bed and one 12-foot vertical floor boring mill. This buyer, was one which was reported to have purchased a large quantity of German made tools, but which denied having purchased more than one German tool. The A. O. Smith Corp., Milwaukee, placed orders for a quantity of equipment, including special power presses and riveting machines. In addition to these sales there has been some scattered buying throughout the various districts.

Many Prospective Tool Buyers

PROSPECTIVE purchasers of equipment include the Pettibone Mulliken Co., Chicago and the General American Tank Car Corp., Chicago, which are expected to issue formal inquiries shortly. Other prospective inquirers include the Union Tank Car Line Co., 21 East Eortieth street, New York, and the International Nickel Co., 43 Exchange place, that city, both of which are expected to issue formal inquiries shortly. Inquiries have been received from The Noyes-Buick Co., Boston, for a number of machines; the Eastern Massachusetts Street railway inquired for a half dozen tools while the Badger Fire Extinguisher Co. wants presses. In addition to these fairly sizable inquiries have been placed in the market by The Carnegie Steel Co; The American Sheet & Tin Plate Co.; the Jones & Laughlin Steel Co.; the Central Metal Products Corp., Canton, O., and the Greiner-Semon-Lowry Co., Syracuse, N. Y., which asked for approximately $60,000 of machine tools.

Crane Business Was Dull

CRANE business continued to be dull. A number of new inquiries came out and a number of sales were made, but these latter represented the minimum. Figures have been compiled, which show that despite the present adverse conditions in this industry, sales of overhead electric cranes during the month of January were 70 per cent in excess of those for the preceding month, and at the present rate of production crane builders are estimated to be sold ahead for at least three months.

Single Tool Sales Rule Market

Sales and New Inquiries Are Confined to Single Tools, with Rare Exceptions—Santa Fe Railroad Buys — Prices Continue To Hold, but Dealers Grant Concessions—Trading Active in Locomotive Cranes

DEMAND for machine tools and equipment continues to be confined principally to single machines. Sales during the past week rarely exceeded more than one machine and the same was true of new inquiries received. Despite this dealers in a number of the districts report they notice a small improvement over demand for the past few weeks. In the Detroit district it is stated that some increased activity has been noted in the automotive field, but as yet this has not had any effect on the machine tool market. Price reductions continue to be the main topic of a discussion on the part of both buyers and sellers in all districts. Buyers continue to maintain their attitude of indifference in the matter of closing on equipment, preferring to hold off until the question of price has been definitely settled.

So far as known no additional drops in prices have been made by manufacturers, but in the Cleveland district, it is known that a dealer in new tools has sold some equipment at cost, and in one case at more than $200 under cost. This no doubt is being done in other sections of the country, dealers say. Used tools continue to be more in demand than new. This is due to the fancy price concessions offered by used machinery dealers, both manufacturers and dealers in new tools state. It is known that interesting purchases in the used machinery market have been made by a large organization which heretofore would not consider secondhand equipment.

The question of prices remains the chief point of interest in the market. The meeting of the National Machine Tool Builders' association, the past week, did not throw much light upon the ultimate developments to be expected, though reductions by individual manufacturers continue.

Inquiries current are generally for single tools, but a number of fair sized sales included that to the Santa Fe railroad. The Worthington Pump & Machinery Corp., Harrison, N. J., withdrew its inquiry for approximately $300,000 of machine tools. Activity in the crane market was confined principally to trading in locomotive cranes.

Railroad Buys in Eastern Machine Tool Market

NEW YORK, March 1.—An eastern machine tool builder has taken an order from the Santa Fe railroad for approximately $70,000 worth of machine tool equipment. The order included a planer, two radial drills, two boring machines, two slotters, and some other miscellaneous equipment. Approximately $8000 worth of equipment was placed with another seller, with headquarters in this city. Another sizable award to come before the attention of eastern sellers is that of Corning & Co., Albany, N. Y., involving approximately $40,000 worth of general equipment for export to Brazil. This includes blowers, a little machine shop equipment, and other machinery. Two shears and a roll lathe are still to be purchased. The government has placed an order with a local dealer for $15,000 worth of tools, including lathes, milling machines and some other miscellaneous equipment.

The Worthington Pump & Machinery Corp., Harrison, N. J., has withdrawn the inquiry issued some time ago involving about $30,000 worth of machine tools. However, it is now asking for estimating figures on a small amount of equipment for its Cambridge, Mass., plant.

Activity in cranes appears to be confined principally to trading in locomotive cranes. The United States Shoe Machinery Corp., Beverly, Mass., has placed an 8-wheel, 15-ton crane with the Brown Hoisting Machinery Co., Cleveland, O. The Parklap Construction Co., 84 Pine street, has purchased two 15-ton cranes for use in constructing a dam for the International Paper Co., at Glenn Falls, N. Y,. with the Browning Co., Cleveland. The Crane Co., Chicago, has purchased an 8-wheel, 15-ton used Ohio crane with 50-foot boom from Philip T. King, 30 Church street. The crane is for installation at its Bridgeport, Conn., plant. The Consolidated Pipe Co., Amsterdam, N. Y., has purchased a 15-ton used locomotive crane. The J. G. White Engineering Corp. 43 Exchange place, has purchased a 15-ton locomotive crane for export to Manila, the order going to the Brown Hoisting Machinery Co., Cleveland. The St. Lawrence Marine Railway Co., Ogdensburg, N. Y., recently bought a locomotive crane. Among current locomotive crane inquiries are a 15-ton, 8-wheel crane with 50-foot boom, for the Mechanicsville Sand & Gravel Co., Mechanicsville, N. Y., of which G. N. Dulin is manager; a 15-to 20-ton crane for the Simmons Machine Co., Albany, N. Y.; a 15-ton, 8-wheel crane for Ira S. Bushey & Son, Inc., foot of Court street, Brooklyn, for installation in a shipyard; a 10-ton, 8 wheel crane with 40-foot boom, for the Russell Machine Co., Inc., Pittsburgh; a 10-ton caterpillar crane with 40-foot boom for the Isaac Joseph Iron Co., Inc., Cincinnati, and a 100-ton wrecking crane for the Florida East Coast Line, of which C. D. Boyce, 120 Broadway, is purchasing agent.

Sampson & Reuter, contractors, Elizabeth, N. J., wish to either buy or rent a 15 to 20-ton locomotive crane with 50-foot span and clam shell bucket. The Union Tank Car Line Co., 21 East Fortieth street, is inquiring for a 15-ton locomotive crane. The American Pipe & Construction Co., Amsterdam, N. Y., is asking bids on a 35-ton locomotive crane. The Standard Oil Co. of New Jersey has placed on the market for resale a used 15-ton Browning locomotive crane, equipped with a bucket.

James Gillies & Co., Long Island City, N. Y., are inquiring for a 15-ton overhead crane. A. R. Masters, Hampton,

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Va., is inquiring for a 5-ton, single I-beam handpower crane with 34-foot span for the Coast Artillery school at Fortress Monroe. An interesting feature is an inquiry for 36 jib cranes of one and two tons capacity for shipment to Mexico. Robert Gair & Co., Brooklyn, which recently was in the market for conveying equipment, has indefinitely withdrawn.

Probably the most interesting order in the conveying equipment market is one placed by the Chickasaw Shipbuilding & Car Co., Fairfield, Ala., involving twenty-four 3-ton monorail hoists and nine 4-ton monorail hoists. This business went to the Shepard Electric Crane & Hoist Co., Montour Falls, N. Y., which also received the followings orders: A 3-ton crane with 12-foot span for the Saco-Lowell Co., Lowell, Mass.; a 1-ton crane with 30-foot span for the Crystal Ice Co., Beaumont, Texas; two 1½-ton hoists and four 3-ton trolleys for the G. M. Gay & Son, Los Angeles; and one 5-ton grab bucket monorail hoist for Jancke Co., Inc., New Orleans, and two 2-ton cranes with 18-foot span for the Fox Furnace Co., Elyria, O.

The City of New York, through the department of docks, is soon to ask bids on approximately seventy-five 1½-ton electric winches, for installation on eight piers now in the course of construction on Staten Island. The city is soon to be in the market also for 32 cranes, of the gantry type, for the two piers now nearing completion on Staten Island for the Pan-American company, 233 Broadway. Specifications for these cranes have been definitely settled upon, and it is now expected to be but a matter of two or three weeks until formal bids are asked.

Considerable other pier and terminal work is in prospect at this port. This includes the $30,000,000 terminal of the Cunard Steamship Co., at Weehawken; the $10,000,000 project of the Luckenbach Steamship Co.

Dullness Continues in Pittsburgh District

PITTSBURGH, March 1.—Dullness continues to characterize the machine tool market in this district although some manufacturers report fairly numerous inquiries involving from one to five machines and sellers are hopeful that the time is not far off when these will develop into actual transactions. Prices remain unchanged although if any attractive inquiries were to appear concessions no doubt would be the rule. Buyers apparently are awaiting with interest the outcome of the meeting of the Machine Tool Builders' association in Cleveland. Inquiries continue to come out involving lathes, shears, shapers and other machine tools, but the attitude of the trade generally is to wait for lower prices before closing. The Reliance Machinery Sales Co., Pittsburgh, reports several machine tool sales during the past week including a 1000-pound steam hammer to the Kerr Tool Co., Clarksburg, W. Va.; a 20-inch lathe and a 20-inch shaper to the Pioneer Mechanical Mining Co., Pittsburgh; a 20-inch shaper to the Pennsylvania Smelting Co., Carnegie, Pa.; a 20-inch lathe to the United Engineering & Foundry Co., Pittsburgh; a 4-foot radial drill to the National Radiator Co., New Castle, Pa., and a squaring shear to the Walters Mfg. Co., Pittsburgh. The Carnegie Steel Co. inquiry for equipment for the locomotive shop at the Edgar Thomson works, Braddock, Pa., is still held in abeyance as well as that of a Charleston coal company for several motor-driven machines. The Akron Oil & Gas Co., Wilkinsburg, Pa., is in the market for a used Reed or Bessemer gas engine. A woodworker whose address is given as post office box 153, Newport, Ky., is in the market for a number of woodworking machines. A considerable volume of crane inquiries is coming out and although no awards have yet been made, jobbers feel confident that these will develop within the next few days Request for revised bids on equipment for the plant of the International Nickel Co., Huntington, W. Va., will be up again for consideration on March 1. The Diebolt Safe & Lock Co., Canton, O., recently closed on a 30-ton Morgan crane.

Buyers Hold Out for Concessions

CHICAGO, March 1.—As indicated last week the Santa Fe railroad has placed orders for the equipment on which it had received bids on a lower level than those first submitted and has completed its buying for the present. The original inquiry was reduced considerably both by withdrawing a number of tools and by suspending action for the present on some others. In the latter class are tools which are needed immediately but on which concessions were not made. Hesitancy on the part of buyers continues paramount and inasmuch as the lower figures quoted the Santa Fe railroad have not been made general, users in need of equipment feel they may obtain the same favors by waiting. As a result buying is principally at a standstill and dealers are unable to interest even those who admit they need further equipment.

Volume of Business More Scattering

MILWAUKEE, March 1.—While nothing of a radical change for the better in the machine tool trade is looked for immediately, a well-defined feeling is evident among manufacturers and dealers that improvement is at hand. With business mainly predicated upon price for the last 60 to 90 days, and purchases in a great many cases delayed in the expectancy of revision of lists sooner or later, it is felt that the time is at hand when a settlement of price policy will enable buyers to act more definitely.

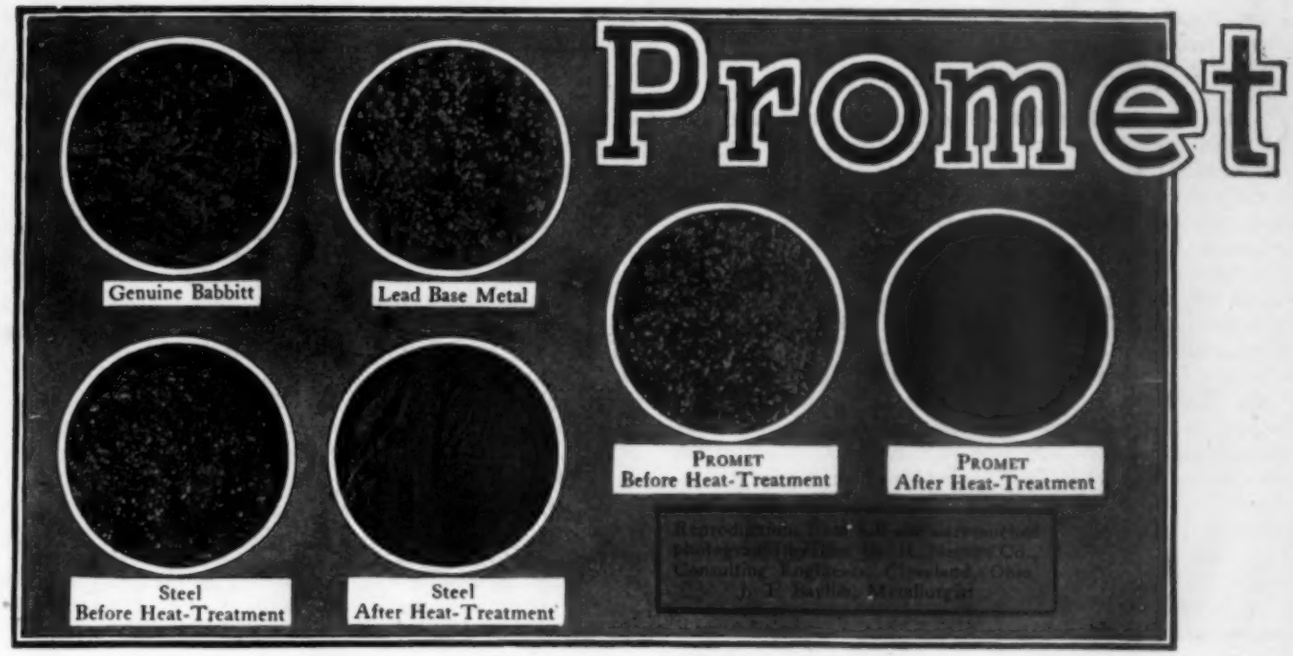
So far as reports are available from manufacturing sources, machine tool business in the month just closed was of a more scattering nature than in January, although the volume was about the same. This means that February business was slightly in excess of December, but not equal to that of October or November. With stocks of finished machines accumulating because sales have not been equal to output, production during the latter part of February showed a further decline, but there is no record of any total suspension.

Canadian Buyers are More Active

TORONTO, Ont., March 1.—The demand for machinery and machine tools throughout Canada is more active. The resumption of operations by automobile companies is having a stimulating effect on the market and dealers are looking for considerable business from this quarter. Inquiries generally call for single machines, but some small lists are also in the market. Many inquiries are turning into sales. While there have been no big lists from the various railroads in Canada, the Canadian National railways is entering the market from time to time with small lists and is a consistent buyer. Several industrial plants have about reached the construction stage where it is necessary for their principals to look around for equipment. Small tools are in better demand and many users who have been buying in limited quantities during the early part of the year are now sending out bigger lists. Prices in all lines of tools remain unchanged.

The Dryob Steel Co., Orillia, Ont., is making arrangements to start work on a plant to cost approximately $50,000. The building will be 75 x 150 feet, and in addition a furnace room will be erected. The Transparent Rubber Co., Danforth avenue, Toronto, Ont., will rebuild its plant recently damaged by fire.

The St. John Dry Dock & Shipbuilding Co., Drummondville, Que., will dispose of some of the equipment of its plant including: Two 100-horsepower boilers, two steam driven air compressors, 340 cubic feet capacity each, three 6-inch centrifugal pumps; two Aldrich triplex plunger



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Single Tool Sales Rule the Market

CLEVELAND, March 1.—Single machine tool sales and inquiries continue the rule in this district. As has been the trend for some weeks past, used machinery is moving much better than new tools, this dealers attributing to the fancy price concessions offered on such equipment. It is known that a number of dealers in new tools in this district have made concessions, which in many instances have resulted in sales at a loss. In one instance a dealer sold a tool approximately $200 under the price he had paid for it originally.

No further price reductions have been reported, although much speculation is current as to the future policies in this respect to be followed by tool manufacturers. It was thought this question might be clarified as the result of the convention last week in Cleveland of the National Machine Tool Builders' association. However, no announcements or declarations, formal or informal, were forthcoming from the association which would throw light upon the subject.

It is understood that regarding the question of price, dealers are pressing manufacturers for a definite stand. One dealer in this district states that in general it is not so much reductions that are wanted, as it is a definite price policy by manufacturers. This dealer points out that under existing conditions, many dealers are at a disadvantage as against their competitors where one manufacturer has cut his prices and another manufacturer in the same line has not done so.

Little business is apparent in this district. Sales continue few and far between and still are confined to single tools. No inquiries of size are out and dealers are not expecting any for some time. The automotive industry is at a standstill in this district, although a dealer from Detroit reports conditions there have somewhat improved.

During the past week a dealer in this district sold a 30-inch planer to the Lamson & Sessions Co., Cleveland. A punch press was bought by the Mills Co., Cleveland, and several other small transactions were completed. One dealer, who has been in the market for used machinery, closed on a radial drill and two shapers during the week.

Among inquiries current is one from a Cleveland user for a large press. Another inquiry received in this district, which may develop into one of fair size, is that of the Liberty Stamping & Mfg. Co., Detroit. This company has a new plant and is in the market for machine tools and general equipment.

Construction and Equipment

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Among New England Plants

WATERVILLE, ME.—The Keyes Fibre Co. has let the contract for the erection of a brick, concrete and steel, 2-story, 45 x 95-foot pump and machine room; 1-story, 90 x 140-foot drier room and a 1-story, 40 x 150-foot pulp room.

ARLINGTON, MASS.—Semi-Unit Corp. has been organized with a capital of $5000, to manufacture surgical instruments, etc. Luella L. Goold is president.

BOSTON—Two buildings at the plant of the B. F. Sturtevant Co., maker of blowers, recently was damaged by fire.

BOSTON.—The New England Oilless Bearings Co. has been incorporated by George E. Parker, George E. Parker Jr. and A. H. Welch.

BOSTON—The Champion Mfg. Co. has been incorporated to make automobile accessories with $25,000 capital by Myer Sborowsky, Harry Shafer and W. Shafer.

BOSTON—Lombard & Co., Inc., has been incorporated to make tools with $350,000 capital by John H. McGill, West Medford, Mass., William H. McGill, Winchester, Mass., and Walter L. McGill, Cambridge, Mass.

BOSTON—Rockwood, McIntyre, Inc., has been incorporated to make agricultural implements with $50,000 capital by Wendell D. Rockwood and M. M. Dunn, both of Cambridge, Mass., and Joseph W. McIntyre.

BOSTON—Basley & Carpenter, Inc., has been incorporated to make mechanical appliances with $50,000 capital, by William H. Bazley, Walter H. Carpenter, Malden, Mass., and Henry A. Bascom.

BOSTON—Ivar-Lite, Inc., has been incorporated to make electric apparatus with $250,000 capital by G. Ivar Johnson, Malden, Mass., Herbert K. Feeney, Brookline, Mass., and Robert G. H. Willison.

BOSTON—The Masterphone Co. has been incorporated to make phonographs with $1,000,000 capital by William J. Sullivan, John S. H. Petit and M. F. Durham, Somerville, Mass.

BOSTON—The Forcier Patent Construction Co. has been incorporated to make metal products with $25,000 capital by William S. Forcier, Wollaston, Mass., George A. Ray, Quincy, Mass., and John W. French.

BOSTON—The Union Maritime Co. has been incorporated to build water craft of all kinds with $250,000 capital by Edward A. Holmes, Quincy, Mass., William E. Martin and Clement J. Dore.

BOSTON—The New England Plating Co. has been incorporated to make metal products with $25,000 capital by Abraham Jacobson and Aaron Reisberg, both of Malden, Mass., and Joseph Bearak.

BOSTON—Ivar-Lite, Inc., has been organized with a capital of $250,000 to manufacture electrical apparatus. G. Ivar Johnson is president; H. E. Pheeney, 8 Brewster street, Brookline, is treasurer, and R. G. E. Willison is secretary.

BOSTON—The Hagar-Mann Mfg. Co. has been incorporated to make motors, etc., with $500,000 capital by Franklin D. Hagar and Gordon J. Langell, both of Somerville, Mass., Orrin W. Mann, Arthur B. Corey and William F. Brock, both of Rockland, Mass.

CHICOPEE FALLS, MASS.—The Belcher-Taylor division of the Bateman Co., Inc., maker of agricultural implements, is to enlarge its plant and transfer work from other divisions.

FITCHBURG, MASS.—The Holland-Kenyon Machine Co. has been organized by John W. Holland and Samuel A. Kenyon.

FITCHBURG, MASS.—The foundation of a boiler house, machine shop and service building, to cost $95,000, is being laid for the Fitchburg Gas & Electric Co.

LYNN, MASS.—Work has been started on the 32-foot, 177 x 220-foot factory addition to the West Lynn plant of the General Electric Co.

NEW BEDFORD, MASS.—The North End Welding & Machine Shop has been started by Louis A. Martin.

NEW BEDFORD, MASS.—Plans have been completed for a factory to cost $40,000 for the New Bedford Shuttle Co.

HOLYOKE, MASS.—The P. & A. Shops, general machinist, has been established by Arthur

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624 Real Estate Trust Bldg., Philadelphia
625 Plymouth Bldg., Minneapolis
646 Central Bldg., Seattle
Masonic Temple, Mobile
731 Hammond Bldg., Detroit
Foot of Chestnut Street, Milwaukee

Daehn, Paul C. Schubach and Gustave A. Geissler.

LYNN, MASS.—W. H. C. Aircraft Co. has been incorporated for $25,000. W. S. Walker is president of the concern.

RANDOLPH, MASS.—The Randolph Foundry Co. has been incorporated with $10,000 capital stock, by A. J. Sanders, Christopher Tangen and J. F. Holmes.

SPRINGFIELD, MASS.—The Chapman Valve Mfg. Co. plans a foundry, 77 x 50 feet.

SPRINGFIELD, MASS.—The United Electric Service Co. has been incorporated to make electrical appliances with $100,000 capital by Edward A. Higney, Palmer, Mass., John G. Waddell and Charles J. Weston.

TAUNTON, MASS.—The Modern Equipment Co. has been incorporated to make appliances of all kinds with $95,000 capital by Harry B. Eaton, C. Eaton and John E. Welch.

WORCESTER, MASS.—The Viking Specialty Co. has been incorporated to make hardware and tools with $10,000 capital, by Willis R. Smith, Auburn, Mass., William E. Gifford and Frederick A. Nelson.

WORCESTER, MASS. — The Play-O-Lite Co. has been incorporated to make electric lamps with $15,000 capital stock, by Allen Fraser, Harry W. Goddard and George M. Thompson, all officials of the Wickwire Spencer Steel Corp. The business was removed from Buffalo.

NEW HAVEN, CONN.—The Sperry Engineering Co. is erecting a 1-story and basement, 43 x 73-foot office building.

NEW HAVEN, CONN.—The Columbia Mfg. Co. has been incorporated to make knives, etc., with $50,000 capital, by H. M. Halper, R. H. Dorgen and J. H. Ready.

NEW HAVEN, CONN.—The Drake Mfg. Co., Inc., has been incorporated to make radiators, etc., with $30,500 capital, by L. A. Drake and C. C. Sibley, both of Hamden, Conn., and B. E. Hoffman.

STAMFORD, CONN.—The Parsons Engineering Co., Inc., has been incorporated with $15,000 capital, by H. A. Parsons, H. W. Woods Jr., and M. Parsons.

North Atlantic States

BATAVIA, N. Y.—The Batavia Car Works, Inc., plans a factory and office building at a cost of $250,000.

BROOKLYN, N. Y.—A $10,000 machine shop addition will be erected by W. M. Currie, 70-74 Adams street.

BALTIMORE—A 75 x 150-foot plant will be erected by the Carter Type Machine Co., Industrial building.

BROOKLYN, N. Y.—The Erie Basin Blacksmith Shop has been incorporated with $10,000 capital stock, by S. Fuhrman, I and F. E. Zvirin, 140 Rivington street.

BROOKLYN, N. Y.—The Bedford Lamp Works has been incorporated with $15,000 capital stock, by C. G. Katz, S. E. Gertler and A. Adler, 411 Bedford avenue.

BROOKLYN, N. Y.—The Lexington Iron Works has been incorporated with $10,000 capital stock, by O. Santag Jr., A. Pascarelli, and B. Gluck, 160 Hight street.

BUFFALO—The Caldwell Gas Utilities, gas burners, has been incorporated with $1,000,000 capital stock, by A. J. Gray, D. Masterson and L. H. McClelland.

DEPEW, N. Y.—The Roll Bros. Mfg. Co. has been incorporated with $100,000 capital stock, by W. L. and R. Roll and others, to manufacture light machinery and metal specialties, etc.

DUNKIRK, N. Y.—A $20,000 factory building will be erected here by the Commercial Machine Co. Plans call for a structore 1-story high, 47 x 157 feet.

HUDSON, N. Y.—The North Hudson Chemical Co. plans a warehouse, one story, 40 x 92 feet, to cost about $8000.

LOCKPORT, N. Y.—The Lockport Deoxidized Bronze & Metal Co. has been incorporated with $30,000 capital stock, by J. C. Rock, P. K. Haber and J. Zaluski.

NASSAU, N. Y.—The Nassau Foundry & Mfg. Co. has been incorporated with $100,000 capital stock, by C. G. and L. Z. Zielman and H. B. Woollard.

NEW YORK—The Corn Products Refining Co. plans a plant to consist of three units.

NEW YORK—The New York Dock Co. plans an office building, two stories, 26 x 49 feet, to cost about $11,000.

NEW YORK—The White Fuel Oil Engineering Co. plans a foundry building, two stories, 99 x 103 feet, to cost about $75,000.

NEW YORK—The Giles Engineering Co., Grand Central Palace, plans a 4-story metal-working plant, 60 x 135 feet.

NEW YORK—The Louis Bayer Electrical Co. has been incorporated with $5000 capital stock, by H. S. and S. Fleischer and I. Geiger, 1662 Madison avenue.

NEW YORK—The Rex Automatic Safety Gas Appliance Co. has been incorporated with $15,000 capital stock, by A. Caponegro, L. Steinberg and M. X. Hecht, 65 Ludlow street.

NEW YORK—The Superior Fireproof Door & Sash Co., 1181 Carter avenue, plans a 1-story plant addition, 63 x 140 feet, to cost about $15,000.

NEW YORK—The Astoria Light, Heat & Power Co., 130 East Fifteenth street, will build a 1-story plant addition, 47 x 225 feet, to cost about $80,000.

NEW YORK—C. Kessel, 150 Nassau street, and associates, have organized the Peabody Brass works, to manufacture brass, and bronze castings and other metal products.

NEW YORK—The W. N. Best Furnace & Burner Corp. has been incorporated with $1,000,000 capital stock, by M. Roger, R. J. Sykes and W. H. Gillen, 1246 Pacific street.

NEW YORK—The Utility Safety Appliance Corp. has been incorporated with $5000 capital stock, by J. F. Schlesinger, C. H. Pape and S. Herzog, 116 Nassau street.

NEW YORK—The Adirondack Mfg. Co. has been incorporated with $40,000 capital stock, by G. A. Buckley, M. J. Jahelka and J. Sherry, 70 Wall street.

NEW YORK—The Sunset Lighting Fixture Co. has been incorporated with $20,000 capital stock, by J. J. Lazarol, A. C. Mandel and E. Goodman, 1480 Washington avenue.

NEW YORK—The Monarch Metal Bed Co. has been incorporated with $50,000 capital stock, by L. Birch, A. A. Detsch and L. J. Rosette, 740 West End avenue.

PLATTSBURGH, N. Y.—Todd & Buick has been incorporated to make motors with $75,000 capital stock, by K. F. Klein, M. J. Clow and J. B. Todd.

SCHENECTADY, N. Y.—The Metal Parts Tool Co. has been incorporated with $8375 capital stock, by S. R. Van Patten, H. L. Kay and A. T. St. Louis.

UTICA, N. Y.—The Utica Gas & Electric Co. plans a power house, one story, 118 x 129 feet.

EAST ROCHESTER, N. Y.—The Rochester Woven Belting Corp. has been incorporated with $20,000 capital stock, by M. W. Sloan, G. F. and D. W. Schelter.

BLOMSBURG, PA.— The Penn Silk Machine Co., has been incorpated with $5000 capital stock, by Paul Z. Harman, Frank J. Richard and William J. Hartman.

JOHNSTOWN, PA.—The N. B. Swank Machinery Co. has been incorporated with $100,000 capital stock, by N. B. Swank, R. M. Schuster and others.

PHILADELPHIA—Plans have been completed for a small machine shop addition to the plant of the Philadelphia Gear Works.

PHILADELPHIA—The Elwood Ivans Tube Works, Oak Lane, will receive bids shortly on a 1-story brick factory.

PHILADEPHIA—The Alfred Box Co., 813 North Front street, manufacturer of hoisting machinery etc., plans a-story shop building, 25 x 28 feet and 34 x 60 feet.

PHILADELPHIA—Jacob R. Keiser, 416 South Broad street, and associates, have organized the Sheet Metal Products Co., to manufacture metal specialties, etc.

PITTSBURGH—The Mine Safty Appliance Co. plans a 1-story office building at a cost of $14,000.

PITTSBURGH—The Andrews Dental Casting Machine Co. is being organized by A. P. Lindsay, 1267 Frick Annex, and others.

PITTSBURGH—The Pennsylvania Metal Reduction Co. has been incorporated with $10,000 capital stock, by Edward F. Straw, Samuel Heer and others.

ATLANTIC CITY, N. J.—The Atlantic City Electric Co. will erect a plant addition at a cost of $800,000.

NEWARK, N. J.—Bender & Son have plans for a 1-story machine shop, 50 x 100 feet.

NEWARK, N. J.—The Becker Leiss Chain Co. has been incorporated with $24,000 capital stock, by Charles A. Becker, Alfred Scheuffle and John M. Leiss.

NEWARK—A 1-story machine shop, 50 x 100 feet, will be erected here by Bender & Son, from plans prepared by Convery & Klemm.

FARR HILLS, N. J.—The Union Hook & Ladder Co. plans a building, two stories, 33 x 70 feet, to cost about $15,000.

TOWN OF UNION, N. J.—The Public Safety Signal Corp. has been incorporated with $100,000 capital stock to manufacture safety signals, etc., by Hugo Faller, Harry A. Klein and others.

TRENTON, N. J.—J. H. Morris Co., Broad Street Bank building, will erect a 1-story manufacturing plant, 60 x 70 feet, at a cost of $8000.

BALTIMORE—The Williamson Products Co., hardware specialties, has been incorporated with $50,000 capital stock, by D. Hines, W. A. Woolford and W. H. Price Jr.

BALTIMORE—The Washington, Balti-

AIRCO OXYGEN AND ACETYLENE SERVICE

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An AIRCO "D" Cutting Torch being used to burn out shanks of old rivets. The heads of these rivets were also removed by the torch.

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Bold type indicates the city also contains an Airco District Office. Address correspondence to nearest District Office

Send for Airco booklet, "Cutting Cast Iron with the Oxyacetylene Torch." Mention The Iron Trade Review when writing.

more & Ohio railroad is receiving bids on the erection of a 4-story brick and stone terminal in this city.

COLEMAN, VA.—The Bedford Pulp & Paper Co. plans a power plant addition to cost about $25,000.

LYNCHBURG, VA.—The United Cigarette Machine Co. plans a plant addition, two stories, 50 x 150 feet, to cost about $40,000

NORFOLK, VA.—The American Engineering Corp. has been incorporated with $50,000 capital stock, by J. J. Fielde and others.

WILMONT, VA.—The Refractory Products Co. has been organized with $900,000 capital stock, and is planning to establish a plant for the manufacture of fire brick, etc.

Central States Activity

FOND DU LAC, WIS.—The Sanitary Iceless Refrigerator Co. is being organized by Arthur J. Heath, inventor and patentee of a new type of ice box with an artificial ice-making unit inbuilt. A factory will be leased and the manufacture of the article undertaken about June 1.

MILWAUKEE—Joseph J. Cato, W. A. Roundry and Thomas Kotting have incorporated their business under the name of Milwaukee Marine Repair Co. The capital stock is $25,000.

MILWAUKEE—Articles of incorporation have been filed by the Auto Appliance Mfg. Co., with $50,000 capital, by Stephen W. Neldner and Ben C. Wiczynski to manufacture and deal in automobile parts, accessories and supplies of all kinds.

OSHKOSH, WIS.—The business established about four months ago as the Oshkosh Radiator Co. has been incorporated under the same name, with a capital stock of $6000. The company manufactures automobile, truck and tractor radiators and does general repairs in sheet metals. The owners are John Termaat, Thomas McKelvey and Edward H. Huessner.

DETROIT—William Christian, 172 Connecticut avenue, and others, have organized the Superior Stove & Stamping Co., to manufacture stoves, etc.

HUDSON CITY, MICH.—Richard Allingham and others, have organized the South Michigan Brass Foundry, to manufacture, brass, bronze and other metal castings.

MARYSVILLE, MICH.—The Illinois Tool Co. plans the erection of a plant building, 1-story, 400 x 1200 feet, to cost about $100,000.

CHICAGO—The J. Lanski & Son Scrap Iron Co., 216 North Sacramento street, plans a 2-story plant, 90 x 98 feet, to cost about $40,000.

CHICAGO—The Standard Auto Remodeling Co., 808 West Jackson boulvard, has been incorporated with $5000 capital stock, by Esther Fantanner, Ernst Fantanner, Conrad Larsen and others.

CHICAGO—The Automotive Production Co., 831 Chicago avenue, has been incorporated with $2500 capital stock, by M. M. Poehringer, John L. Smith, Arthur A. Basse and others.

CHICAGO—The M. Axelman & Sons Co., 217 South Dearborn street, has been incorporated to manufacture leather goods, etc., with a capital stock of $10,000, by Sam Axelman, Louis L. Cohen, Harry W. Axelman, Mayer Axelman and others.

CLINTON, ILL.—The Safety Zipper Mfg. Co. has been incorporated with $150,000 capital stock, by G. E. Pollick, A. D. Barnes and L. P. Barnett, to manufacture metal products.

TERRE HAUTE, IND.—The Adjustable Bearing Co. has been incorporated with $25,000 capital stock, by C. A. and Z. M. Maris, and others, to manufacture roller bearings, etc.

CANTON, O.—The Wilson Rubber Co., 1216 Garfield avenue, has started on the erection of a plant addition, which will cost about $75,000.

CINCINNATI—The Laminated Metal Products Co. is being organized, by E. C. Kline and others.

CINCINNATI—The C. L. Greene Co., spring maker, is having plans prepared for a plant building, 60 x 285 feet.

CLEVELAND—The Bevington Metal Stamping Co. has been incorporated with $25,000 capital stock, by J. E. Bevington and others.

CLEVELAND—The Cleveland Wire & Cable Co. has been incorporated with $10,000 capital stock, by D. J. Hard, H. S. Gillie, and others.

CLEVELAND—The Hertner Electric Co., 1900 West 112th street, plans a 1-story factory building and warehouse, 50 x 250 feet.

CLEVELAND—The Cleveland Indicator Co. has been incorporated with $50,000 capital stock, by C. Locher, C. Carroll and others.

CLEVELAND—The Cleveland Wrist Pin Co. has been incorporated with $500 capital stock, by W. A. McAfee, M. F. Hanning, and others.

CLEVELAND—The Premier Refining & Mfg. Co. has been incorporated with $3000 capital stock, by H. W. Caldwell Jr., M. M. Hughes, H. Perelman, and others.

CLEVELAND—The Ironium Products Co. has been incorporated with $150,000 capital stock, by W. P. Hunsdorf Jr., F. L. Fuller, and others.

COLUMBUS, O.—The Atlas Chain Hoist Co. has been incorporated with $25,000 capital stock, by C. E. Ross, C. A. Morrison, G. Oberlinger, G. F. Burwell and M. J. Bergin.

DAYTON, O.—The Garrison Gear Grinder Co. has been incorporated with $50,000 capital stock, by O. Garrison, E. A. Tucker, A. M. Garrison, J. R. Garrison and B. M. Garrison.

NORWALK, O.—Plans are being drawn for a plant addition, two stories, 63 x 160 feet, for the Pioneer Rubber Co.

CLARKSBURG, W. VA.—The Ridenour Turner Co. has been incorporatd with $50,000 capital stock, by J. R. Summers and others, to manufacture automobile parts, etc.

WHEELING, W. VA.—The Eureka Specialty Mfg. Co. has been incorporated with $50,000 capital stock, by W. M. Gallagher and others.

WHEELING, W. VA.—The Eureka Specialty Mfg. Co. has been incorporated with $50,000 capital stock, by C. S. Keedy, D. T. Haudenschield and others.

In the South

CHATTANOOGA, TENN.—The Mountain City Stove & Mfg. Co. has been incorporated with $50,000 capital stock, by John G. Martin, Ernest Martin, H. H. Hadden, D. B. Harris and J. Walter Love.

KNOXVILLE, TENN.—The Dempster Steam Motor Co. has been organized with $1,000,000 capital stock, and will operate a plant for the manufacture of mine locomotives and other steam-driven equipment. George R. Dempster is one of the officers of the company.

MEMPHIS, TENN.—The Memphis Coffin Co. is reported having plans drawn for a plant addition.

MEMPHIS, TENN.—The Ideal Tractor Cultivator Co. has purchased a plant building which it will remodel for its own use.

GREENSBORO, N. C.—The Roberson-Strader Co. is planning a new machine shop, to replace one recently damaged by fire.

JACKSON, N. C.—The Consolidated Natural Abrasive Mining Co. of America has been organized with $2,000,000 capital stock, by S. A. Jones, I. L. Council and others.

ATLANTA, GA.—The National Bean & Pea Picker Co. has been incorporated with $250,000 capital stock, by W. A. Sims, F. E. Davis, F. A. Hooper and others, to manufacture machinery.

ATLANTA, GA.—The Cotton States Rubber Co. has been incorporated with $500,000 capital stock, by R. W. Ragin, J. B. Neff and R. B. Hawley, to manufacture mechanical and other rubber products.

TITUSVILLE, FLA.—The Superior Motor Works, Inc., has been incorporated with $100,000 capital stock, by T. G. Knight, J. Anchors and G. J. Reuter, to manufacture automobile equipment, etc.

SAVANNAH, GA.—The Anderson Visible Pump & Tank Co. has been incorporated with $25,000 capital stock, by V. R. Anderson, M. C. McCarthy and J. L. Kenny. The company will manufacture gasoline and oil storage pumps.

NEWTON, ALA.—The Houston Power Co. will construct a dam 50 feet high with a power house.

TARRANT CITY, ALA.—For the purpose of manufacturing automobile rims and various steel products, a new plant is being erected here on a 10-acre site by the Caddenhead Auto Rim Co.

VICKSBURG, MISS.—B. J. Robinson's Machine Works has been incorporated with $ 0,000 capital stock, by Barton J., S. B. and A. H. Robinson.

JACKSONVILLE, FLA.—The machine shops of the Perry & Gulf railroad recently were damaged by fire. The loss was estimated at $40,000.

Chicago Daily Tribune.

THE WORLD'S GREATEST NEWSPAPER

VOLUME LXXX—NO. 11. THURSDAY, JANUARY

PRICE TWO CENTS

AUTO OUTPUT TO BE CUT IN HALF, STEEL MEN AVER

BY O. A. MATHER.

The American automotive industry is expected this year to produce only about half of last year's output, which would be approximately 1,000,000 cars, according to well informed steel makers. The steel industry itself shows little improvement, and several months of part capacity operations are expected. Steel prices continue to show weakness, but wage reductions have not been general.

"Signs of an early resumption of automobile demand on an accustomed scale are not promising," The Iron Trade Review says. "A recent careful survey of the prospects of the automotive industry for the coming year developed the fact that not more than a 40 per cent production is expected in well informed quarters. This would represent substantially

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PROOF—

THE IRON TRADE REVIEW

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Throughout the West

MINNEAPOLIS—The Western Body Mfg. Co. plans the erection of a 3-story plant building.

ST. LOUIS—Waycleanse Co., manufacturer of vacuum street cleaners, will erect a $300,000 plant and will establish its home office here.

HOPE, ARK.—The Arkansas-Texas Oil Co. plans to establish a refinery and construct a pipe line.

ANADARKO, OKLA.—The Caddo Mfg. Co. has been organized with $10,000 capital stock, to manufacture acetylene generators, etc., by C. J. Scheetz, O. C. Stephenson and others.

HENRYETTA, OKLA.—Warring & Co. will occupy a machine shop, one story, 40 x 150 feet.

MOUNTAIN VIEW, OKLA.—This city plans improvements to its power plant.

OKLAHOMA CITY, OKLA.—The plant of the O. G. Block Sheeting & Metal Co. recently was damaged by fire.

TULSA, OKLA.—The Tulsa Auto Mfg. Co. plans a new plant.

YALE, OKLA.—The Buffalo Refining Co. has been organized by G. W. Lillie, Edward M. Weist and others, and will establish a refinery.

ARGENTINE, KANS.—The Atchison, Topeka & Santa Fe railway, plans a machine shop and tool room addition.

BURLINGAME, KANS.—This city contemplates a municipal power plant.

PITTSBURG, KANS.—The Atlas Power Co. is having plans drawn for a power plant.

TOPEKA, KANS.—This city plans an addition to its power plant, 34 x 57 feet, to cost $10,000.

DALLAS, TEX.—The Atlas Axle Mfg. Co. has been incorporated with $50,000 capital stock, by H. L. Battle, A. D. Graham Jr., and R. E. Cannon.

DALLAS, TEX.—The Blanchard Saw & Machine Co. has been incorporated with $10,000 capital stock, by J. H. Blanchard, J. W. Simmons and J. C. Weaver.

DALLAS, TEX.—The Dougherty Roofing Co. has been incorporated with $7500 capital stock, by F. A. Urie and Edward P. Dougherty.

DUBLIN, TEX.—The Texas Power & Light Co. plans extending transmission line to Waco and Temple, Tex.

EL PASO, Tex.—The Hill-Sutton Co., metal products, will erect a building, one story, 85 x 150 feet, at a cost of $20,000.

FT. WORTH, TEX.—The Texas Cyclone Fence Co. has been incorporated with $25,000 capital stock, by J. P. Arthur, Joseph Slomer and R. G. Russell.

HOUSTON, TEX.—The Southern Pacific railroad, H. M. Lull, Houston, chief engineer, will rebuild its burned shops at a cost of $1,000,000.

VALLEY CITY, N. D.—The Valva Coal Products Co. plans an electric generating plant.

DENVER—The Chicago, Burlington & Quincy railroad, 547 West Jackson boulevard, Chicago, has bought a tract of 160 acres on which it will build railroad shops.

CENTRALIA, WASH.—The Tennent Steel Casting Co. has been incorporated with $100,000 capital stock.

SEATTLE—The Safety Fire Alarm Co. has been incorporated with $200,000 capital stock.

UMATILLA, OREG.—At a meeting of representatives of the cities of Umatilla, Pendleton, Stanfield, Hermiston, Boardman and Arington, plans were initiated for the erection of a hydroelectric power plant at Umatilla rapids. The plans call for a plant to produce 120,000 horsepower the year round and 200,000 additional horsepower during the irrigation season.

COTTONWOOD, CAL.—The Pacific Gas & Electric Co. is reported planning the erection of a substation and power line in this city.

FORTUNA, CAL.—The Pacific Lumber Co. is having plans prepared for an electric power plant.

LONG BEACH, CAL.—The Acme Machine Co., Anaheim and Gladys avenues, has been organized to manufacture machinery by A. T. Cooper and L. F. Valentine, 128 East Eighth street.

LOS ANGELES.—The Los Angeles Gas & Electric Co., 645 South Hill street, plans an addition.

LOS ANGELES—The Western Tool & Engineering Co., 1310 East Sixth street, has been organized to manufacture machinery and tools, by N. E. Brown and others.

LOS ANGELES—Robert H. Gaylor, 1814 Virginia road, has organized the Gaylord Foundry Co. The plant will be located at 2601 East Twenty-sixth street.

LOS ANGELES—The Lincoln Heights Sheet Metal Works, 119 North Daly street, has been organized to manufacture iron and other metal products.

LOS ANGELES—The Finn Bros. Pipe & Steel Works, 1308-16 North Spring street, has been organized to manufacture iron and steel products, by T. P. Finn, M. J. Richard and others.

MODESTO, CAL.—The Power, Implement & Machine Works has been incorporated to manufacture a power motor attachment.

OAKLAND, CAL.—The Shartzer Illuminated License Plate Co. has started work on the first four units of its proposed new plant. The company has seven acres on the Oakland waterfront.

OAKLAND, CAL.—The Mobile Signal Lamp Co. of California, has been incorporated with $75,000 capital stock, to manufacture signal lamps, and other automobile specialties, etc., by J. Robinson, C. A. Delancey, E. Ritchie and C. B. Robinson.

OAKLAND, CAL.—The Straub Mfg. Co. has been incorporated with $200,000 capital stock, to engage in a general manufacturing and machine shop business, by W. B. Straub, J. Niemeyer, E. S. Page and A. E. Curran.

SAN DIEGO, CAL.—The Navy will let contracts here next month covering an expenditure of $2,000,000, which includes a naval warehouse, etc.

SAN FRANCISCO—Henry Rosenfeld, 907 Rialto building, plans a 1-story machine shop, to cost $12,000.

SAN FRANCISCO.—The Pacific Refrigerator Co. is opening plant at 31-35 Gough street for the manufacture of refrigerators, etc. William F. Droisk is manager.

Business in Canada

MONTREAL, QUE.—Brydges, Ltd., have been incorporated to carry on business as manufacturers and rollers of steel, iron, metals, rails, etc., with $100,000 capital stock, by Alexandre P. Mathieu, Arthur F. Brydges, Joseph Lippe, and others.

MONTREAL, QUE.—The machine shop owned by A. Lamarche, 14 Lafontaine Park and occupied by the Montreal Machine Shop, Ltd., 143 Ontario street east, was damaged by fire with damage to building and machinery of $100,000.

QUEBEC, QUE.—The Canadian Skate Mfg. Co., Ltd., has been incorporated to manufacture skates, iron, steel and metal goods, etc., with $50,000 capital stock, by Joseph A. Joli-Coeur, Antonio Graveline, Michael B. Collier, and others.

HAMILTON, ONT.—The Ellis-McIntyre Motors, Ltd., have been incorporated to manufacture and deal in automobiles, trucks, tractors, etc., with $150,000 capital stock, by Daniel J. McIntyre, Willoughby Ellis, and others.

HAMILTON, ONT.—The Chadwick-Carroll Brass Co., Ltd., has been incorporated to manufacture brass goods, etc., with $40,000 capital stock, by Walter W. Chadwick, Daniel T. Carroll, and others.

KINGSVILLE, ONT.—The McIlroy Belting Works of Canada, Ltd., has been incorporated to manufacture belting, etc., with $50,000 capital stock, by Frank B. McIlroy, Hammons, Ind.; Gordon J. Gillard, Walter H. Kimpton, of Toronto, and others. It is the intention of the company to start work at once on the establishment of a manufacturing plant here.

TORONTO, ONT.—The Victory Automobile Accessories, Ltd., has been incorporated to manufacture special automobile locks, with $250,000 capital stock, by William S. Walton, John D. F. Ross, and others.

TORONTO, ONT.—The Wooley Smith Co., Ltd., has been incorporated to manufacture lighting devices, machinery, appliances, etc. with $150,000 capital stock, by James N. Bicknell, Frazer K. Wilson, Albert O. Llewellyn and others.

TORONTO, ONT.—The General Steel & Copper, Ltd., has been incorporated to manufacture metallurgical and mechanical supplies, iron, steel and metal goods, etc., with $40,000 capital stock; by Henry H. Davis, James S. Beatty, John R. Rumball and others.

TORONTO, ONT.—The Coloway Motors, Ltd., have been incorporated to manufacture automobiles, trucks, engines, etc., with $150,000 capital stock; by William K. Murphy, Hugh H. Donald, Donald M. Shaw and others.

TORONTO, ONT.—The Sumbling Machinery Co. has been incorporated to manufacture iron, steel, machinery, washing machines, etc., with

(*Concluded on Page 662*)

29 years ago—

First By-Product Coke Ovens built in the United States. The Semet-Solvay Ovens built in 1892 at Syracuse, N. Y. and still in operation with original structure.

View of Pusher Side

View of Discharge Side

IN 1892, 29 years ago, the first By-Product Coke Oven Plant built in America was erected at Syracuse, New York, by the Semet-Solvay Company. It is interesting to note that the original oven structure is still in operation performing each day the functions designed for it over a quarter of a century ago.

Despite all the changes and improvements in the art, the fundamental characteristics of the original Semet-Solvay Oven have remained. The same simple, efficient methods of heating control are employed; the same heavy foundations and strong division walls are still integral parts of the construction and offer the same assurance of long, useful existence and high economies.

Correspondence is invited

Address Plant Development Department

SEMET-SOLVAY COMPANY

Syracuse, New York

1892—Pioneer in the development of the By-Product Coke Oven—1921

SEMET-SOLVAY BY-PRODUCT COKE OVENS

Iron and Steel Scrap Prices

CORRECTED TO TUESDAY NOON GROSS TONS DELIVERED TO CONSUMER

Steel Works Scrap

HEAVY MELTING STEEL

Pittsburgh	$15.00 to 16.00
Chicago	14.25 to 14.75
Eastern Pennsylvania	14.00 to 15.00
Cleveland	14.00 to 14.50
St. Louis	14.00 to 14.50
Buffalo	15.00 to 15.50
New York (dealers)	9.50 to 10.00
Birmingham	15.00 to 16.00
Cincinnati	15.00 to 16.00
Valleys	15.00 to 15.50
Boston (dealers)	8.50 to 9.50
Detroit	10.50

BUNDLED SHEETS

Pittsburgh	$11.00 to 12.00
Eastern Pennsylvania	13.50 to 14.50
Cleveland	7.00 to 8.00
Buffalo	10.00 to 11.00
Cincinnati	9.00 to 10.50
St. Louis	7.00 to 7.50

STEEL RAILS, SHORT

Chicago	15.50 to 16.00
Boston (dealers)	12.00 to 13.00
Cleveland	11.00 to 12.00
St. Louis	14.50 to 15.00
Birmingham	15.00 to 16.00
Cincinnati	15.50 to 16.00

STOVE PLATE

Pittsburgh	$16.00 to 17.00
Chicago	19.50 to 20.00
Eastern Pennsylvania	16.00 to 17.00
Cleveland	15.00 to 16.00
Detroit	19.00 to 20.00
Birmingham	17.00 to 18.00
Buffalo	17.00 to 18.00
New York	15.00 to 15.50
St. Louis	17.25 to 17.75
Cincinnati	19.00 to 21.00
Boston (consumers)	14.00 to 14.50

LOW PHOSPHORUS

Pitts., billet and bloom crops	$22.00 to 23.00
Cincinnati	23.00 to 24.00
Buffalo	21.00 to 22.00
Eastern Pennsylvania	21.00 to 22.00

SHOVELING STEEL

Chicago	14.00 to 14.50
St. Louis	13.00 to 13.50
Pittsburgh	12.00 to 12.50

KNUCKLES, COUPLERS & SPRINGS

Pittsburgh	$16.00 to 17.00
Chicago	15.50 to 16.00
St. Louis	14.50 to 15.00
Eastern Pennsylvania	18.00 to 20.00

COMPRESSED SHEETS

Pittsburgh	$12.00 to 13.00
Chicago	11.50 to 12.00
Buffalo	12.00 to 13.00

FROGS, SWITCHES, GUARDS

Chicago	$14.25 to 14.75
St. Louis	14.00 to 14.50
Eastern Pennsylvania	14.00 to 15.00

BOILER PLATE, CUT

Detroit	$9.50 to 10.50
St. Louis	9.00 to 9.50

ANGLE BARS—STEEL

Chicago	$15.00 to 15.50
St. Louis	13.50 to 14.00

Iron Mill Scrap

RAILROAD WROUGHT

Pittsburgh, No. 1	$16.00 to 17.00
Pittsburgh, No. 2	15.00 to 16.00
Chicago No. 1	15.00 to 15.50
Chicago, No. 2	14.50 to 15.00
Eastern Pennsylvania No. 1	20.00 to 21.00
Cleveland, No. 1	15.00 to 16.00
St. Louis, No. 1	14.00 to 14.50
St. Louis, No. 2	13.50 to 14.00
Buffalo	20.00 to 21.00
Cincinnati	16.00 to 17.00
Birmingham, No. 1	15.00 to 16.00
New York, No. 1 (dealers)	15.50 to 16.00
Boston (dealers)	13.00 to 13.50

WROUGHT PIPE

Eastern Pennsylvania	$14.50 to 15.50
Buffalo	13.00 to 14.00
New York (dealers)	10.50 to 11.00
Boston (dealers)	10.50 to 11.00

YARD WROUGHT

Boston	11.50 to 12.00
Eastern Pennsylvania, No. 1	16.00 to 18.00

CITY WROUGHT

New York, long	$13.00 to 14.00

BUSHELING

Chicago, No. 1	14.50 to 15.00
Chicago, No. 2	11.50 to 12.00
Cleveland, No. 1	10.00 to 11.00
Cleveland, No. 2	7.00 to 8.00
St. Louis, No. 1	14.00 to 14.50
Buffalo, No. 1	13.00 to 14.00
Cincinnati, No. 1	16.00 to 17.00
Eastern Pennsylvania, No. 1	15.50 to 16.00

MACHINE SHOP TURNINGS

Pittsburgh	$10.00 to 11.00
Chicago	7.50 to 8.00
Eastern Pennsylvania	12.50 to 13.00
Cleveland	9.00 to 9.25
Buffalo	11.00 to 12.00
New York (dealers)	8.50 to 9.00
St. Louis	5.50 to 6.00
Detroit	5.00
Cincinnati	6.50 to 7.50
Birmingham	8.00 to 9.00
Valleys	8.00 to 8.25
Boston (dealers)	6.50 to 7.00

CAST IRON BORINGS

Pittsburgh	$11.50 to 12.50
Chicago	11.25 to 11.75
Eastern Pennsylvania	12.00 to 13.00
Eastern Pennsylvania (chem.)	14.00 to 15.00
Cleveland	12.00 to 13.00
St. Louis	9.50 to 10.00
Detroit	7.50
Buffalo	11.00 to 12.00
New York (dealers' price)	10.00 to 11.00
Cincinnati	10.00 to 11.00
Birmingham	8.00 to 9.00
Valleys	12.00 to 12.50
Boston (dealers)	7.00 to 7.50
Boston (chemical)	9.50 to 10.00

MIXED BORINGS AND TURNINGS

(For blast furnace use)

Eastern Pennsylvania	$10.00 to 11.00
Boston (dealers)	5.50 to 6.00
Cleveland	10.00 to 12.00

IRON AXLES

Pittsburgh	$36.00 to 37.00
New York (dealers)	33.00 to 34.00
Chicago	38.50 to 39.00
Eastern Pennsylvania	30.00 to 31.00
Detroit	39.00
Cleveland	28.00 to 29.00
St. Louis	32.00 to 32.50
Buffalo	30.00
Cincinnati	36.00 to 37.00
Birmingham	30.00 to 32.00

IRON RAILS

Chicago	$20.50 to 21.00
Cleveland	17.00 to 18.00
St. Louis	18.00 to 18.50
Buffalo	21.00 to 22.00
Cincinnati	25.00 to 26.00

PIPES AND FLUES

Chicago	$11.25 to 11.75
Cleveland	9.00 to 10.00
Detroit	10.50 to 11.25
St. Louis	11.50 to 12.00
Cincinnati	12.00 to 13.00

GRATE BARS

Chicago	14.50 to 15.00
Cleveland	19.00 to 20.00
Detroit	14.00 to 15.00
Buffalo	14.00 to 15.00
New York (dealers)	15.50 to 16.00
Eastern Pennsylvania	17.00 to 18.00

FORGE FLASHINGS

Cleveland, large	$9.00 to 10.00
Chicago, small	10.00 to 10.50
Cleveland, small	8.00 to 9.00
Boston (dealers)	7.00 to 7.50

FORGE SCRAP

Chicago	$14.50 to 15.00
Eastern Pennsylvania, No. 1	15.00 to 16.00
Boston	7.00 to 7.50

ARCH BARS AND TRANSOMS

Chicago	$23.00 to 23.50
St. Louis	21.00 to 21.50

ANGLE BARS—IRON

Chicago	$21.00 to 21.50
St. Louis	19.00 to 19.50

Iron and Steel Works Scrap

AXLE TURNINGS

Pittsburgh	$12.00 to 13.00
Eastern Pennsylvania	13.50 to 14.50
Boston (dealers)	7.00 to 7.50
St. Louis	8.00 to 8.50
Detroit	10.00 to 10.50
Cleveland	13.50 to 14.00
Buffalo	14.50 to 15.50
Chicago	11.50 to 12.00

STEEL CAR AXLES

Pittsburgh	$22.00 to 23.00
Eastern Pennsylvania	25.00 to 26.00
Cleveland	25.00 to 26.00
St. Louis	18.00 to 18.50
Buffalo	25.00 to 26.00
Chicago	18.50 to 19.00
New York (dealers)	17.50 to 18.50
Birmingham	20.00 to 21.00
Boston (dealers)	17.50 to 18.00
Detroit	20.00

SHAFTING

Eastern Pennsylvania	$25.00 to 26.00
St. Louis	20.00 to 20.50
New York (dealers)	19.00 to 20.00
Chicago	26.00 to 26.50
Boston (dealers)	17.00 to 18.00

Iron Foundry Scrap

CAR WHEELS

Pittsburgh, iron	$21.00 to 22.00
Pittsburgh, steel	16.00 to 17.00
Chicago, iron	19.50 to 20.00
Eastern Pennsylvania, iron	23.00 to 24.00
Cleveland, iron	35.00 to 36.50
St. Louis, iron	19.00 to 19.50
Buffalo, iron	24.00 to 25.00
Birmingham, iron	21.00 to 21.50
Birmingham, tram car	20.00 to 21.00
Boston (consumers)	24.00 to 24.50
Cincinnati	22.00 to 23.00
New York, iron	21.00 to 22.00
Detroit	25.75 to 26.75

NO. 1 CAST SCRAP

Pittsburgh, cupola	$22.00 to 23.00
Chicago, cupola	20.50 to 21.00
Eastern Pennsylvania, cupola	22.00 to 23.00
Cleveland, cupola	21.00 to 22.00
New York cupola (dealers)	19.00 to 20.00
Cincinnati, No. 1, machinery, cupola (net)	21.00 to 22.00
Detroit	18.00
Birmingham, cupola	19.00 to 20.00
St. Louis, railroad	19.00 to 19.50
St. Louis, agricultural	18.50 to 19.00
Buffalo	20.00 to 21.00
Boston (consumers)	22.50 to 23.50
Valleys	21.00 to 22.00

HEAVY CAST

New York (dealers)	$18.00 to 19.00
Buffalo	19.00 to 20.00
Pittsburgh	16.00 to 17.00
Cleveland	14.00 to 14.50
Boston (consumers)	18.00 to 19.00

MALLEABLE

Pittsburgh, railroad	$15.00 to 16.00
Pittsburgh, agricultural	13.00 to 14.00
Chicago, railroad	17.00 to 17.50
Chicago, agricultural	17.00 to 17.50
Eastern Pennsylvania, railroad	18.00 to 20.00
Cleveland, railroad	17.50 to 18.00
Cleveland, agricultural	14.00 to 15.00
St. Louis, railroad	13.50 to 14.00
St. Louis, agricultural	14.00 to 14.50
Cincinnati, railroad	15.00 to 16.50
Cincinnati, agricultural	16.00 to 17.00
Boston, railroad	15.00 to 16.00
Buffalo	15.00 to 16.00
Detroit	11.00 to 12.00

Miscellaneous Scrap

REROLLING RAILS

5 feet and over

Pittsburgh district	$16.00 to 17.00
Chicago	15.00 to 15.50
Eastern Pennsylvania	18.00 to 20.00
Cleveland	17.00 to 18.00
St. Louis	15.50 to 16.00
Birmingham	15.00 to 16.00
Boston (dealers)	12.50 to 13.00
New York (dealers)	15.00 to 16.00

LOCOMOTIVE TIRES

Chicago	$14.25 to 14.75
St. Louis	11.00 to 11.50

LOW PHOSPHORUS PUNCHINGS

Chicago	$17.50 to 18.00
Eastern Pennsylvania	16.00 to 20.00
Pittsburgh	17.00 to 18.00

FERRO
MANGANESE

FERRO
SILICON

FERRO
CHROME

FLUOR SPAR

IRON AND STEEL SCRAP

BABBITT

"MILLCO" SERVICE

A SERVICE THAT WILL PLEASE YOU

THE JAMES S. MILLER CO.
McCORMICK BUILDING CHICAGO

New Trade Publications

BELTING—A circular has been published by J. E. Rhoads & Sons, Philadelphia, in which attention is called to belting manufactured by the company. It is illustrated.

COMPRESSORS—The Chicago Pneumatic Tool Co., New York, is circulating a bulletin in which pneumatic oil engine driven compressors are described and illustrated. Details of construction, specifications, etc., are given.

PUMPS—The Anderson Visible Pump & Tank Co., Savannah, Ga., is circulating a 6-page illustrated folder in which quick delivery, self-measuring gasoline pumps, as well as tanks, oil and gasoline storage systems, etc., are described and illustrated.

TRANSMISSION MACHINERY—The Hill Clutch Co., Cleveland, is circulating a 4-page illustrated bulletin in which transmission machinery in a modern oil refinery is described and illustrated. The information given is interesting and valuable.

MACHINE SHOP—The Seybold Machine Co., Dayton, O., is circulating an illustrated booklet of 16 pages, in which various parts of the company's plant are described and illustrated. The booklet is entitled "A Trip through the Plant of the Seybold Machine Co." This plant is said to be one of the largest in the world devoted exclusively to the manufacture of machinery.

Business in Canada

(*Concluded from Page* 658)

$1,000,000 capital stock. The officers of the company include W. H. Sumbling, general manager; J. T. Morgan, sales manager.

TORONTO, ONT.—The Gillespie Eden Corp., Ltd., has been incorporated to manufacture electrical appliances, machinery, motors, etc., with $40,000 capital stock; by Forbes C. Grassick, Toronto, Ont.; Thomas H. Gillespie, Waldo H. Marshall and others of New York.

TORONTO, ONT.—The Manitowoc Shipbuilding Corp., a corporation created under the laws of the state of Wisconsin, has been granted a license to carry on business in Ontario with $40,000 capital stock and has appointed R. B. Henderson to be its representative.

TORONTO, ONT.—The Brant Foundries, Ltd., has been incorporated to build and operate foundries, steel plants, to manufacture iron, steel, metals, castings, forgings, etc., with $40,000 capital stock, by John Jennings, 169 Lowther avenue, Arthur R. Clute, 67 Yonge street, and others.

TORONTO, ONT.—The Canadian Pulp Machinery & Engineering Co., Ltd., has been incorporated to manufacture pulp and paper machinery equipment, etc., with $200,000 capital stock, by Elmer E. Wallace, 205 Jarvis street, John A. Ryan, 1464 King street west, and others.

Business Changes Announced Recently by the Trade

THE general sales, purchasing and accounting departments of the Reed Prentice Co., the Becker Milling Machine Co., and the Whitcomb Blaisdell Machine Tool Co. have been moved from Boston to Worcester in accordance with a plan adopted by these combined interests. Previously, the Boston offices of these companies were located at 53 Franklin street, that city.

* * *

New York offices have been established at 25 Park place, by the Western Tool & Mfg. Co., Springfield, O.

* * *

Advices have been received from the Wilder Metal Coating & Mfg. Co., formerly of Connellsville, Pa., to the effect it has moved its plant and offices to Niles, O., where its capacity is greatly enlarged.

* * *

Offices have been opened in the Title Insurance building, Los Angeles, by Hickok & Hickok, San Francisco. The company is the western representative of the United Alloy Steel Corp., Pollak Steel Co., Edgewater Steel Co., Stroh Steel-Hardening Process Co., Ft. Pitt Spring & Mfg. Co., and the Keystone bronze Co., H. J. Barton and J. W. Criglar are in charge of the new offices.

* * *

Cleveland offices of the McClintic-Marshall Co. and the Riter-Conley Co. have been moved from the Hotel Statler to Hanna building, Euclid avenue and East Fourteenth street, that city. This building is now nearing completion.

* * *

Offices have been opened at 1137 Commercial Trust building, Philadelphia, and 639-640 Court Square building, Springfield, Mass., by Walton & Wright, industrial engineers and manufacturers accountants.

* * *

The Bridge & Beach Mfg. Co., St. Louis, pioneer in the Western stove industry, recently moved into its new factory building in the West End industrial district of St. Louis. The company has been at its old location since 1837.

* * *

General sales offices of the Page Steel & Wire Co., with plants at Monessen, Pa. and Adrian, Mich., were transferred on March 1 from 644 Union Arcade, Pittsburgh, to 1054 Grand Central Terminal, New York. District sales offices will be maintained in Pittsburgh, 817 Guardian building, Cleveland; 208 South La Salle street, Chicago, and Adrian, Mich.

* * *

New offices in the Cook building, 4614 Prospect avenue, Cleveland, are now being occupied by the Watson Engineering Co., engineer, architect etc. These offices practically double the company's old quarters and are arranged so as to provide the greatest possible efficiency and convenience.

* * *

The Andrew Carrigan Co., with offices in the Rialto building, San Francisco, has been appointed representative of the Wyckoff Drawn Steel Co., for all territory west of the Rocky mountains, with the exception of the states of Oregon and Washington.

* * *

C. W. Pike Co., 22 Battery street, San Francisco, has been appointed California agents for the Wheeling Steel Products Co. W. A. Taylor, who has been up the present time, the western manager for the La Belle Iron Works, with offices in the Rialto building, will close that office and join the organization of C. W. Pike Co.

A convincing endorsement:

"We are enclosing our order for two more —"

"We are handing you herewith our check for the two Rivet Heaters shipped to us two months ago. We wish to say that they are all you said they were, and more. We look upon them as being the best thing we have put into our boiler shop in many years.

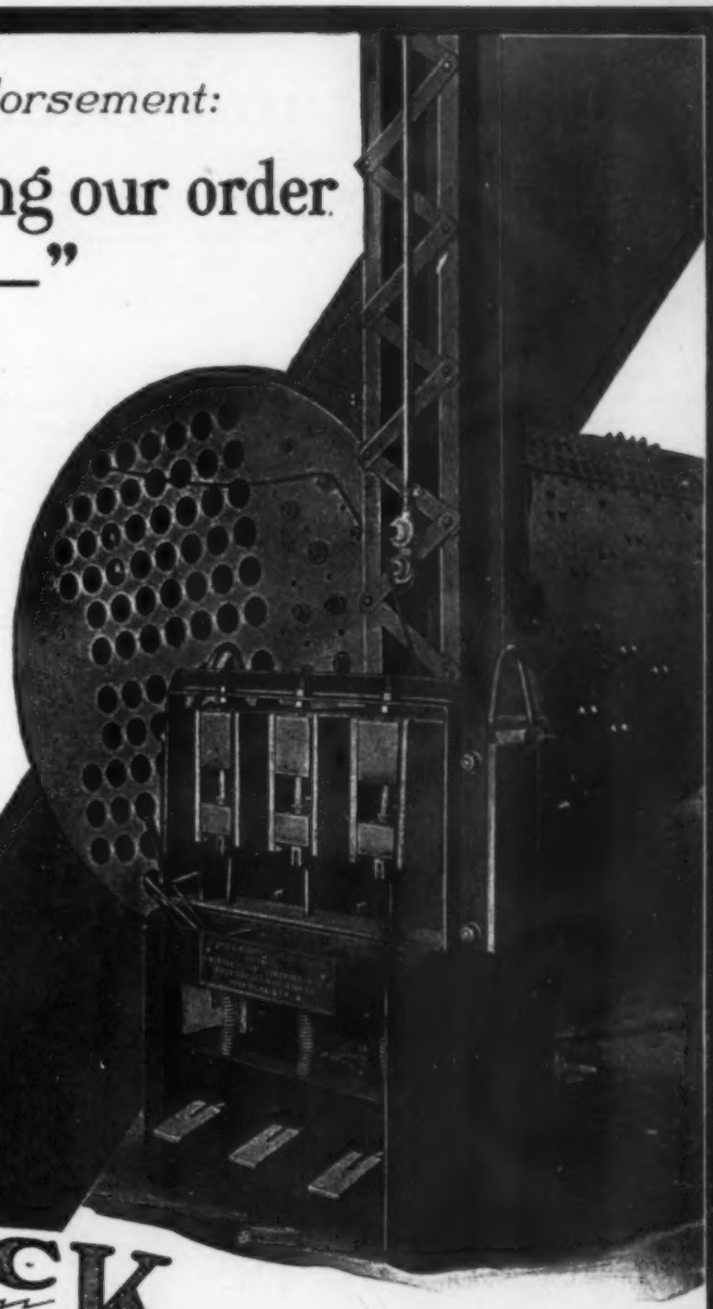
"We are enc'osing an order for two more, to be executed at the earliest possible moment."

This endorsement from Charles Freeman, president, Freeman Mfg. Co., Racine, Wis., backed by a repeat order, is typical of many.

The National Steel Car Corporation, Hamilton, Canada, has sent in three such repeat order endorsements. They bought one Berwick in 1915, one in 1916, 18 on May 7th, 1920, and 3 more September 28th, 1920. A total ot 23 heaters.

Among other users of 763 Berwicks are:

American Locomotive Co., 20 Heaters.
Pressed Steel Car Co., 26 Heaters.
Virginia Bridge & Iron Co., 11 Heaters.
Brown Hoisting Machinery Co., 10 Heaters.
Hydraulic Pressed Steel Co., 15 Heaters.



BERWICK ELECTRIC RIVET HEATER

One of four Berwick Electric Rivet Heaters used by the Freeman Mfg. Co., Racine, Wis.

Write for detailed information. No obligation involved. Please mention number and sizes of rivets used and alternating current conditions.

American Car and Foundry Company

Chicago **165 Broadway, New York** **St. Louis**

Iron and Steel Prices

Iron Ore

Superior Ores, Per Ton, Lower Lake Ports

Old range Bessemer, 55 per cent iron	$7.45
Mesabi Bessemer, 55 per cent iron	7.20
Old range nonbessemer, 51½ per cent iron	6.70
Mesabi nonbessemer, 51½ per cent iron	6.55

Port Henry Iron Ore, f.o.b. Port Henry

Old bed 21 furnace	$5.80
Old bed concentrates, 63 per cent	6.70
Harmony, cobbed, 63 per cent	6.70
New bed, low phos., 65 per cent	9.50
Lump ore for fix	7.00

Manganese Ore

Brazilian, 48 to 50 per cent c.i.f. Atlantic ports, 35 to 40 cents per unit, nominal.

Indian 48 to 50 per cent c.i.f. Atlantic ports, 35 to 40 cents per unit, nominal.

FLUOR SPAR

Washed gravel Kentucky and Illinois mines, per ton $22 50 to 25.00

Warehouse Prices

Steel bars, Boston	3.63c
Steel bars, Chicago	3.48c
Steel bars, Cleveland	3.30c to 3.34c
Steel bars, Detroit	3.43c
Steel bars, Philadelphia	3.60c
Steel bars, New York	3.58c to 3.63c
Steel bars, St. Louis	3.575c
Steel bars, Cincinnati	3.58c
Steel bars, St. Paul	3.76c
Steel bars, Buffalo	3.50c
Steel bars, San Francisco	4.75c
Iron bars, Boston	3.65c
Iron bars, Buffalo	4.20c
Iron bars, Chicago	3.48c
Iron bars, Detroit	3.43c
Iron bars, St. Louis	3.57½c
Iron bars, Cincinnati	3.58c
Iron bars, Philadelphia	3.60c
Iron bars, New York	3.58c to 3.63c
Shapes, Chicago	3.58c
Shapes, Detroit	3.53c
Shapes, Boston	3.73c
Shapes, St. Louis	3.675c
Shapes, St. Paul	3.86c
Shapes, New York	3.68c to 3.73c
Shapes, Cleveland	3.40c to 3.44c
Shapes, Philadelphia	3.50c
Shapes, Buffalo	3.6 c
Shapes, Cincinnati	3.68c
Shapes, San Francisco	4.85c
Plates, Buffalo	3.80c
Plates, Chicago	3.78c
Plates, Detroit	3.73c
Plates, Boston	3.93c
Plates, St. Louis	3.875c
Plates, St. Paul	4.06c
Plates, New York	3.88c to 3.93c
Plates, Cleveland	3.6 c to 3.64c
Plates, Philadelphia	3.90c
Plates, Cincinnati	3.60c
Plates, San Francisco	5.40c
No. 10 blue anl. sheets, N. Y.	4.78c to 4.83c
No. 10 blue anl. sheets, Phila.	4.80c
No. 10 blue anl. sheets, Chi.	4.6 c
No. 10 blue anl. sheets, Clev.	4.30c
No. 10 blue anl. sheets, Boston	5.20c
No. 10 blue anl. sheets, Buf.	4.70c
No. 10 blue anl. sheets, Det.	4.63c
No. 10 blue anl. sheets, St. L.	4.77½c
No. 10 blue anl. sheets, Cin.	4.78c
No. 10 blue anl. sheets, St. P.	4.96c
No. 10 blue an. shts, San Fr.	6.50c
No. 28 black sheets, Chicago	5.73c
No. 28 blk. sheets, New York	5.83c
No. 28 blk. sheets, Phila.	5.75c
No. 28 blk. sheets, Cleveland	5.25c
No. 28 blk. sheets, Boston	6.05c
No. 28 blk. sheets, Cincinnati	5.63c
No. 28 blk. sheets, Detroit	5.60c
No. 28 blk. sheets, St. Louis	5.85c
No. 28 blk. sheets, St. Paul	6.00c
No. 28 blk. sheets, Buffalo	5.75c
No. 28 blk. shts., San Fran.	7.25c
No. 28 galv. sheets, Chicago	7.10c
No. 28 galv. sheets, N. Y.	7.00c to 7.13c
No. 28 galv. sheets, Phila.	7.00c
No. 28 galv. sheets, Boston	7.40c
No. 28 galv. sheets, Cleveland	6.50c
No. 28 galv. sheets, Cincinnati	6.75c
No. 28 galv. sheets, Detroit	6.95c
No. 28 galv. sheets, Buffalo	7.10c
No. 28 galv. sheets, St. Louis	7.20c
No. 28 galv. sheets, San Fran.	8.75c

Freight Rates

PIG IRON

Mahoning and Shenango valleys to:

Cleveland	$1.96
Newark, N. J.	6.72
Boston	7.28
Philadelphia	6.32
Pittsburgh	1.96
Chicago	5.32
St. Louis	6.44
Minneapolis, St. Paul	7.60

Buffalo to:

Albany, N. Y.	$2.52
New England (rail)	5.46
New York and Brooklyn (rail)	5.46

Virginia furnaces to:

Philadelphia	$5.74
New England	6.58
Brooklyn, Jersey City, Newark	6.16

Birmingham, Ala., to:

Boston	$10.665
Boston (rail and water)	7.65
Cincinnati	4.50
Chicago	6.66
Cleveland	6.66
Louisville, Ky.	4.12
Minneapolis, St. Paul	9.73
New York	10.26
Philadelphia	8.665
Pittsburgh	7.60
Savannah, Ga.	4.25
St. Louis	5.725

Chicago to:

Des Moines	$4.725
Minneapolis, St. Paul	3.375
Milwaukee	0.89
Moline, Ill.	1.89
Omaha	6.07
St. Louis	2.725

Ironton and Jackson, O., to:

Chicago	$5.32
Cincinnati	2.52
Cleveland	3.36
Detroit	3.64
Indianapolis	3.22
Minneapolis, St. Paul	8.40

FINISHED MATERIAL

Pittsburgh, carloads, per 100 lbs., to:

New York	$0.38
Philadelphia	0.35
Boston	0.415
Buffalo	0.295
Baltimore	0.335
Cleveland	0.24
Cincinnati	0.32
Chicago	0.38
Detroit	0.32
Minneapolis and St. Paul	0.66
Denver	1.32
St. Louis	0.475
New Orleans	0.515
Birmingham	0.765
Pacific coast (all rail)	1.665
Pacific coast (tin plate)	1.665

Bands, New York	4.28c to 4.33c
Bands, Boston	4.58c
Bands, Detroit	4.13c
Bands, Buffalo	5.30c
Bands, San Francisco	5.45c
Hoops, Buffalo	4.20c
Hoops, Boston	5.00c
Hoops, New York	4.58c
Hoops, Detroit	4.13c
Cold rolled shafting, Buffalo	5.25c
Cold rolled shafting, N. Y.	5.50c to 5.65c
Cold rolled shafting, Boston	5.25c
Cold rolled shaft'g, San Fr.	6.75c
Cold rolled flats, squares and hexagons, New York	6.00c to 6.15c
Cold rolled rounds, Detroit	5.00c

Tubular Goods

Pittsburgh basing discounts to jobbers in carloads

Steel Pipe

STANDARD WEIGHT

Butt Weld	Black	Galvanized
⅛, ¼ and ⅜-inch	50½	24
½-inch	54½	40
¾ to 3-inch	57½	44
Lap Weld		
2-inch	50½	38
2½ to 6-inch	53½	41
7 to 12-inch	50½	37
13 to 14-inch	41	
15-inch	38½	
PLUGGED AND REAMED		
Butt Weld		
1 to 3-inch	55½	42
Lap Weld		
2-inch	48½	36
2½ to 6-inch	51½	39
EXTRA STRONG PLAIN ENDS		
Butt Weld		
⅛, ¼ and ⅜-inch	46½	29
½-inch	51½	39
¾ to 1½-inch	55½	43
2 to 3-inch	56½	44
Lap Weld		
2-inch	48½	37
2½ to 4-inch	51½	40
4½ to 6-inch	50½	39
7 to 8-inch	46½	33
9 to 12-inch	41½	28
DOUBLE EXTRA STRONG PLAIN		
Butt Weld		
½-inch	42½	32
¾ to 1½-inch	45½	35
2 to 2½-inch	47½	37
Lap Weld		
2-inch	40½	31
2½ to 4-inch	42½	33
4½ to 6-inch	41½	32
7 to 8-inch	36½	23

Wrought Iron Pipe

Pittsburgh basing discounts to jobbers in carloads

THREADS AND COUPLINGS

Butt We'd	Black	Galvanized
⅛-inch	+ 5½	+31½
¼-inch	15½	11½
⅜-inch	24½	6½
½ to 1½-inch	29½	13½
Lap Weld		
2 and 2½-inch	25½	11½
3 to 6-inch	27½	14½
7 to 12-inch	24½	11½

PLUGGED AND REAMED

Two points less than above

Butt We'd		
⅛-inch	+13½	+46½
¼-inch	13½	+ 3½
⅜-inch	23½	10½
½ to 1½-inch	29½	14½
Lap Weld		
2 and 2½-inch	26½	13½
3 to 4-inch	28½	16½
4½ to 6-inch	27½	15½
7 to 8-inch	19½	7½
9 to 12-inch	14½	2½
DOUBLE EXTRA STRONG PLAIN ENDS		
Butt Weld		
½-inch	+37	+49
¾-inch	+17½	+49
1-inch	+33½	+45½
1¼-inch	+17½	+29½
1½-inch	+16½	+28½
Lap Weld		
2 and 2½-inch	+ 2½	+14½
3 to 4-inch	2½	+ 6½
4½ to 6-inch	1½	+ 7½
8-inch	+ 3½	....

Boiler Tubes

STEEL

1¼ and 2-inch	19½
2¼-inch	24
2½ to 3¼-inch	30½
3½ to 4½-inch	40½

IRON

1¼-inch	+10
2-inch	List
2¼-inch	2
2½ and 2¾-inch	6
3 and 3¼-inch	7
3½ to 4½-inch	12